DOCUMENT RESUME

ED 297 052 UD 026 276

AUTHOR Calhoun, Charles A.; Espenshade, Thomas J.
TITLE Childbearing and Wives' Foregone Earnings. Project Report.
INSTITUTION Center for Policy Research, New York, N.Y.; Urban Inst., Washington, D.C.
SPONS AGENCY National Inst. of Child Health and Human Development (NIH), Bethesda, Md. Center for Population Research.
PUB DATE Nov 86
CONTRACT NICHHD-N01-HD-12820
NOTE 57p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Birth Rate; Blacks; Educational Attainment; *Employed Parents; Employed Women; *Employment Opportunities; Enrollment; *Labor Force; Marital Status; *Mothers; *Racial Differences; Whites; Working Hours
IDENTIFIERS *Opportunity Costs

ABSTRACT

This report combines the techniques of multistate life table analysis with the human capital theory of wages to derive new estimates of the impact of children on hours of market work and earnings for American women aged 15 to 55 years old. The impact of fertility on female labor force behavior is analyzed, and opportunity expenditures (the money value of foregone employment opportunities) associated with different childbearing patterns is examined. The relative impacts of race, school enrollment, educational attainment, marital status, marital status changes, and birth cohorts are also considered. Among the findings are the following: (1) with identical childbearing patterns, white women forego roughly five times as much as black women in market earnings--approximately $25,000 per birth for white women, and $5,000 per birth for black women; (2) foregone hours of market work per birth are two to three times higher for white women than for black women--approximately 1,500 to 3,000 hours per birth for white women, and 600 to 1,000 hours per birth for black women; (3) opportunity expenditures for white women have been declining over time; (4) for women of similar background and labor market experience, opportunity expenditures on children are roughly proportional to the number of births; and (5) it is the labor supply reductions immediately following each birth that contribute most to observed opportunity expenditures, whereas the effect of total family size is small by comparison. Data are presented on 13 tables. Twenty-six endnotes and 88 references are included. (Author/BJV)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

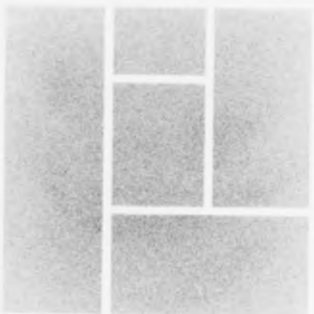
7-6-88

ED297052

CHILDBEARING AND WIVES' FOREGONE EARNINGS

by

Charles A. Calhoun
and
Thomas J. Espenshade



THE URBAN INSTITUTE

UD026276

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

L. Williamson
Urban Institute

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CHILDBEARING AND WIVES' FOREGONE EARNINGS

by

Charles A. Calhoun
and
Thomas J. Espenshade

The Urban Institute
2100 M Street, N.W.
Washington, D.C. 20037

November 1986

Financial support for this research was provided by the Center for Population Research under National Institute of Child Health and Human Development Contract N01-HD-12820. Heather Joshi, Jacob Mincer, Elizabeth Peters, and Warren Sanderson provided helpful comments on earlier versions of the paper. We would also like to acknowledge the expert computer programming of Thy Dao, and the capable technical assistance of Terri Murray. The views expressed in this paper are those of the authors and do not necessarily represent the opinions of The Urban Institute or any of its sponsors.

ABSTRACT

The research reported here combines the techniques of multistate life table analysis with the human capital theory of wages to derive new estimates of the impact of children on hours of market work and earnings for American women aged 15 to 55. Panel data from the National Longitudinal Surveys of Labor Market Experience and multivariate regression techniques are used to estimate tables of working life and to assess the impact of fertility on female labor force behavior. Potential earnings based on a human capital wage model are combined with the working life histories implied by the multistate life table analysis to estimate opportunity expenditures (i.e., the money value of foregone employment opportunities) associated with different childbearing patterns. The relative impacts of race, school enrollment, educational attainment, marital status, marital status changes, and birth cohort are also considered. Some specific findings are: (1) with identical childbearing patterns, white women forego roughly five times as much as black women in market earnings between the ages of 15 and 55 —approximately $25,000 per birth for white women, versus $5,000 per birth for black women, in 1981 dollars; (2) foregone hours of market work per birth are two to three times higher for white women than for black women — approximately 1500 to 3000 hours per birth for white women, versus 600 to 1000 hours per birth for black women; (3) opportunity expenditures for white women have been declining over time; (4) opportunity expenditures on children are roughly proportional to the number of births, for women of similar background and labor market experience; and (5) it is the labor supply reductions immediately following each birth that contribute most to observed opportunity expenditures, whereas the effect of total family size is small by comparison.

INTRODUCTION

The economic impact of children on household budgets in industrialized countries is usually considered to have two components: direct maintenance expenditure, which consists of out-of-pocket spending for food, clothing, education, and the like; and opportunity expenditures, or the opportunities parents forego when bearing and rearing children. An important aspect of opportunity expenditures is the income that women forego by staying home to bear and rear children and by not participating in market work. When opportunity expenditures on children are viewed in this way, two measurement issues are involved. The first is to determine how much time a woman loses from paid employment because of the presence of children. Second, one must assign a monetary value to the time that is lost.

This paper presents estimates of opportunity expenditures on children in the United States as measured by the foregone hours of market work and earnings of women over the ages 15 to 55. A unique aspect of the study is the use of multistate tables of working life to assess the impact of childbearing on age-specific and lifetime hours of market work by mothers. The life table approach is enhanced by the application of multivariate regression techniques to estimate the labor force transition probabilities that underlie the multistate analysis. The data used in the study were obtained by pooling various years and cohorts of the National Longitudinal Surveys of Labor Market Experience (NLS), including the NLS Survey of Young Women (1968-1978), Mature Women (1967-1979), and Youth Cohort (1979-1982).

Some specific conclusions that emerge from the analysis are: (1) with identical childbearing patterns, white women forego roughly five times as much as black women in market earnings between the ages of 15 and 55 --

approximately $25,000 per birth for white women, versus $5,000 per birth for black women, in 1981 dollars; (2) foregone hours of market work per birth are two to three times higher for white women than for black women — approximately 1500 to 3000 hours per birth for white women, versus 600 to 1000 hours per birth for black women; (3) opportunity expenditures for white women have been declining over time; (4) opportunity expenditures on children are roughly proportional to the number of births, for women of similar background and labor market experience; and (5) it is the labor supply reductions immediately following each birth that contribute most to observed opportunity expenditures, whereas the effect of total family size is small by comparison.

This introductory section continues with a discussion of the conceptual framework for the analysis of opportunity expenditures, a survey of previous estimates, and a summary of the procedure used in the present study. A section on methodology outlines the multistate life table framework and the multinomial probability model used to estimate employment status transitions. The section on empirical results presents regressions for employment status transition probabilities and a human capital earnings model. The estimated models are then used to generate multistate tables of working life and to compute the foregone hours and earnings associated with childbearing for women with different background characteristics and fertility histories. The paper concludes with a summary and a suggestion for future research.

A Conceptual Framework for the Analysis of Opportunity Expenditures

Economic theories of household production and human capital formation have been instrumental to the analysis of opportunity expenditures. The theory of household production, first formalized by Becker (1965), and elaborated on by

Muth (1965) and Lancaster (1966), is a conceptual framework for analyzing how utility-maximizing individuals or households combine market goods with their own time inputs to produce the "commodities" that increase welfare.[1] An important element in the household production model is the "household production function" that describes the set of factors that are required to achieve particular commodity or output levels from the inputs of time and market goods by household members. A second innovation of the model is the "full-income constraint" that expresses the feasible choice set in terms of the household income that would be realized if the labor supply of family members were at its maximum level. Time allocated to activities that reduce labor market hours below the maximum is then valued implicitly at the market wage rate. This conceptual framework has been used in previous studies (reviewed below) as the basis for estimating opportunity expenditures on children, and it can be justified by the fact that, among all household activities, bearing and rearing children are some of the most intensive in the mother's time over an extended period.

The second aspect of opportunity expenditures is the dollar value ascribed to hours of market work that are foregone as a result of childbearing. The human capital theory of earnings advanced by Mincer (1962, 1970, 1974), Ben-Porath (1967, 1970), and Becker (1975), holds that life-cycle earnings profiles are determined by the level of schooling, work experience, and other post-schooling investments in the productive capacity of individuals. Mincer and Polachek (1974) and Mincer and Ofek (1982) have extended the approach to account for the fact that time spent out of the labor force may represent a disinvestment or depreciation in accumulated human capital, resulting in a deterioration of earnings potential. This is particularly important for

women, because they withdraw from the labor force on a voluntary basis more frequently than men. Earlier studies of the human capital depreciation phenomenon based on cross-sectional data (Mincer and Polachek, 1974; Sandell and Shapiro, 1970; Corcoran and Duncan, 1979) failed to generate clear-cut evidence of reduced wages. Using longitudinal data on married women from the National Longitudinal Surveys, Mincer and Ofek (1982) found that real wages at reentry to the labor force are lower than at the point of withdrawal, and that the decline is greater the longer the interruption. Mincer and Ofek also found that after a return to work there is relatively rapid growth in wage rates, reflecting restoration of previously eroded human capital. In our work, measures of recent and past labor force experience have been included as explanatory variables to account for the impact of variations in labor force participation rates of women on age-specific earnings.

Previous Estimates of Opportunity Expenditures

There have been several major attempts to quantify the money and time expenditures related to children. Reed and McIntosh (1972) divided the costs of children into direct out-of-pocket expenditures and opportunity costs.[2] For the calculation of direct expenditures, Reed and McIntosh used data derived from the 1960-1961 Consumer Expenditure Survey; expenditures associated with each year of child's life up to age 18 were obtained in one survey year. Reed and McIntosh defined opportunity costs as "earnings that the woman might have had, but had to forego, because of the need to care for her children" (1972, p. 341). Thus, the opportunity cost of a child consists of the number of hours a woman gives up from paid employment because of the child, weighted by the value of those hours. Reed and McIntosh relied on

estimates of the labor force participation rates of women by the ages of their children produced by Bowen and Finegan (1969) from the 1960 Census of Population. These data were then used to construct the number of hours per year these women typically worked. Because better educated women earn more per hour, Reed and McIntosh estimated opportunity costs separately by the educational level of the woman. They found that the opportunity cost associated with rearing a first child from birth to age 14 ranged from $15,500 to $36,100 in 1969 dollars, depending on the educational level of the woman.

Reed and McIntosh's estimates of the direct and opportunity costs of children were updated in 1977 and again in 1980 by Espenshade (1977, 1980). Consumer Price Index data by separate categories of consumption (food, clothing, housing, etc.) were used to adjust direct costs for the effects of inflation. To update the opportunity cost of children, the most recent median income of woman who worked full-time (by educational level) was divided by 2,000 to obtain hourly earnings. Using the Reed-McIntosh methodology, hours lost from employment were multiplied by hourly earnings to obtain opportunity costs. The estimated opportunity cost of a first child ranged from $26,600 to $54,300 in 1977 and from $32,500 to $66,300 in 1980.[3]

Turchi (1975) defined opportunity cost as the total value of the time devoted to child care. Because time spent in child care was not available in the data he used, Turchi approximated it by the extra hours spent doing housework attributable to the presence of children under age 18. Using data from two sample surveys conducted by the Survey Research Center at the University of Michigan, the Productive Americans Survey (1965) and the Family Economics Survey (1970), Turchi estimated that, during the first 18 years of life, an only child entails an additional 9,274 hours of housework. Children

in two-child families were estimated to entail an additional 12,946 hours, and children in three-child families an additional 18,389 hours during their first 18 years. Using the estimated hourly wage that women with a college education could earn if employed full time ($5.29 in 1977), this means an investment of over $97,000 in the three-child family, an average of more than $32,000 per child.[4] Total time costs in two-child families would amount to well over $68,000, with the child in a one-child family involving close to $50,000 worth of a mother's time to age 18.

Lindert (1978) estimated the value of time lost from work because of a child in an analysis of the total and relative cost of children. Estimates of the time spent in housework and child care came from the 1967-1968 Syracuse Time Budget study. Wages of the women were estimated using estimates of wage rate deterioration experienced by the wife as a result of each child, by educational level of the wife, as calculated by Mincer and Polachek (1974). These wages, combined with estimates of returns to work following births from Bowen and Finegan (1969), were used to calculate a complete life-cycle of income and wage rates as a function of family composition. The value of time lost from work because of a child was then obtained by multiplying hours lost by the value of those hours for each single year of age of women whose first child was assumed to be born when she was 24.

Cramer (1979) defined opportunity cost as "income lost by a mother due to reduced employment or total absence from the labor force while bearing and rearing children" (1979, p. 177). Cramer's primary interest was in describing the time lost by women from work because of the birth of a child rather than its cost. Cramer based his estimates on data from the 1968-1971 waves of the Panel Study of Income Dynamics. Rather than examine differences in labor

force hours among women with children of various ages, Cramer used a longitudinal approach. He compared the labor force hours of women who do and who do not have a birth over a three-year period, and found a net decline of about 400 hours of employment as a result of having a baby. Cramer's results are somewhat low compared with the loss of almost 900 hours that were estimated by Bowen and Finegan in the year after the birth, and would appear to be a result of Cramer's sample. Childless couples were excluded; all couples in his sample had at least one child under five in 1968. Other work indicates that the first child has the largest opportunity cost; for example, Turchi (1975) estimated the time cost of a second child to be about half that of the first. Another explanation can be found in the fact that Cramer used longitudinal data. Previous studies based on cross-sectional survey data may have overestimated the impact of children on hours of work. If women who have few children work more hours for reasons unrelated to family size and vice versa, then the cross-sectional relationship between number of children and hours of work will overestimate the impact of children on labor supply.

A New Approach to Estimating Opportunity Expenditures

The approach used in this paper to estimate women's foregone hours and earnings attributable to children employs panel data to calculate opportunity expenditures for separate birth cohorts of women. The use of panel data means that the analysis is not confined to a limited age range of children, but can be extended to the full working life of mothers. Our method is distinguished from previous efforts by the attention we give to life-cycle changes in employment status as the basis for measuring the impact of children on labor supply. Rather than focusing directly on hours of work, we examine the impact

of fertility on transitions between labor force categories defined in terms of the usual number of hours worked per week. The implications for annual hours of work of differences in employment status transition probabilities are summarized using multistate tables of working life. Hourly earnings functions are estimated in an empirical model based on the human capital theory of wages. The working life histories generated in the multistate life table analysis are then combined with estimates of age-specific earnings to express opportunity expenditures on children in terms of foregone earnings.

METHODOLOGY

Multistate Life Table Techniques

Much of recent demographic analysis is concerned with the timing and correlates of the transitions that individuals make from one status to another over their lifetimes. Examples of such transitions include interregional migration, occupational mobility, and entry into and withdrawal from school and the labor force. In addition, aided by the availability of large longitudinal data files, analysts are able to probe deeper into family functioning and the nature of family life-course transitions. Research has focused on the timing of first marriage, the onset of parenthood, the use of contraception, changes in marital status through divorce and remarriage, and the family statuses experienced by children across one- and two-parent families.

The life table is a fundamental tool for analyzing these and other life-course transitions. From the earliest days when it was used by Graunt (1662) and Halley (1693) to study the transitions from "life" to "death," life table methodology has undergone several important developments. The most

straightforward generalization of ordinary single-decrement life tables is to multiple-decrement life tables. These incorporate two or more decrements from an initial status, such as mortality by cause of death or attrition from the never-married state through marriage and death (Grabill, 1945; Jacobson, 1959; Preston et al., 1972; Saveland and Glick, 1969).

The problem of incorporating entrants or increments to life table statuses was first approached through hierarchical increment-decrement life tables, in which the states are ordered in a hierarchy and transitions can only lead upwards in the hierarchy, or to an absorbing state (Hoem and Jensen, 1982). One may think of hierarchical models as being formed by chaining together a series of multiple-decrement tables (Land and Rogers, 1982b). An example is the progression of a cohort through the marital statuses never married, currently married, and formerly married. Others are given in Hoem (1970a, 1970b) and Oechsli (1975). A limiting feature of these hierarchical models, however, is their inability to accommodate reentry into previously occupied states as, for example, in the transition from divorced back to married or from nonemployment back to market work. In such a model, every nonabsorbing state is irretrievable.

This limitation was overcome with the development of nonhierarchical increment-decrement models or Markov chains. In these models, reentry is possible for at least one state. Important early contributions to the statistical theory of nonhierarchical increment-decrement models were made by Du Pasquier (1912, 1913), Fix and Neyman (1951), and Sverdrup (1965). More recent advances suggesting efficient computational algorithms and orienting the theory towards demographic applications are credited to Hoem and Fong (1976), Rogers (1975), Schoen and Land (1979), Schoen and Nelson (1974), and

Willekens et al. (1982). A summary of the latest developments is contained in the important volume edited by Land and Rogers (1982a).[5]

As a consequence, the past decade has witnessed both an increased awareness by demographers of the power and flexibility of increment-decrement (multistate) life table models and also a conspicuous growth in the number of applications of these models to demographic topics. Multistate life tables have been computed for patterns of interregional migration (Lendent, 1981; Rees, 1979; Rogers, 1973a,b; Willekens and Rogers, 1978), marital status changes (Espenshade, 1983; Espenshade and Braun, 1982; Koesoebjono, 1979; Willekens et al., 1982), living arrangements of children (Hofferth, 1984), the educational system (Stone, 1971; 1975), fertility (Koo and Suchindran, 1978; Suchindran and Koo, 1980; and Suchindran et al., 1977), social mobility (Illingworth, 1976), and movements into and out of the labor force (Hoem and Fong, 1976; Schoen and Woodrow, 1980; Smith, 1980, 1982; Willekens, 1980).

Multistate Tables of Working Life

As it is applied in this paper, the multistate increment-decrement life table model for employment status transitions begins with an initial distribution of women into J different employment status categories defined in terms of the usual number of hours worked per week. Thus, $l_i(x)$ gives the number of women at exact age x that are in employment status i, for i=1,2,...,J. Abstracting from mortality, this distribution is transformed into gross flows between employment statuses through multiplication by an age-specific matrix of transition probabilities given by $P(x)=[P_{ij}(x)]$, i,j=1,2,...,J. $P_{ij}(x)$ is the probability that a woman in emplcyment status i at exact age x will be observed to be in employment status j at exact age x+1.

The number of transitions from employment status i to employment status j that occur between exact age x and exact age x+1 is given by:

$$l_{ij}(x) = l_i(x)P_{ij}(x), \qquad i,j=1,2,\ldots,J, \qquad (1)$$

where $l_{ij}(x)$ gives the number of women in state i at exact age x who are observed to be in state j at exact age x+1. The age-specific transition probability matrix P(x) is usually computed from observed occurrence-exposure rates.[6] In our research we have taken a more flexible multivariate regression approach that allows for the introduction of an arbitrary number of control variables. Direct calculation of occurrence-exposure rates is bypassed in favor of estimating the elements of transition matrix P(x) in a series of limited dependent variable regressions for employment status transitions. Once an estimate of transition matrix P(x) has been derived, all other life table functions follow directly and can be computed using existing computer programs designed for that purpose.

A Multinomial Probability Model for Employment Status Transitions

When panel data on the year-to-year labor force statuses of individuals are available, the initial and final statuses for a particular time interval can be ascertained and used to define observed transitions. For the individual initially in one of J possible employment statuses, the observed transition is a limited dependent variable that is subject to analysis using models of discrete choice and multinomial probabilities.[7] The multinomial probability model can be given a specific parametric form and the parameters made functions of explanatory variables such as age, education, income, race, year of birth, marital status, and the number of children ever born.

For individuals in initial employment status i, the problem is to estimate the probability that the final employment status is j, for j=1,2,...,J.[8] The parametric form used in this study is the ordered-probit model, originally developed by McKelvey and Zavoina (1975). To motivate the development of the ordered-probit specification, we assume that the discrete random variable Y_{ni} represents the observed choice of final state j for woman n in initial employment status i, so that Y_{ni} takes the values 1,2,...,J. In the ordered-probit model Y_{ni} is determined by a normally distributed latent random variable, Y^*_{ni}, that is linearly related to explanatory variables X_{ni} according to:

$$Y^*_{ni} = X_{ni}\beta_i + \varepsilon_{ni}. \tag{2}$$

It is assumed that random disturbance ε_{ni} is normally distributed with variance σ_i^2, and that β_i is a column vector of unknown parameters corresponding to the variables in X_{ni}. Observed values of Y_{ni} are determined by a set of threshold equations for latent variable Y^*_{ni}:

$$Y_{ni} = \begin{cases} 1 & \text{if } Y^*_{ni} \leq \mu_{i,1} \\ 2 & \text{if } \mu_{i,1} < Y^*_{ni} \leq \mu_{i,2} \\ \cdot & \\ \cdot & \\ \cdot & \\ J & \text{if } \mu_{i,J-1} < Y^*_{ni}. \end{cases} \tag{3}$$

The parameters $\mu_{i,1}, \mu_{i,2}, \cdots, \mu_{i,J-1}$ determine the threshold or "cut-point" values of Y^*_{ni} that result in different observed values for Y_{ni}. The variance of the normal disturbance is not identified and some normalization of

parameters is necessary. It is assumed here that ε_{ni} has unit variance and that $\mu_{i,1}$ equals zero.[9] The parameters to be estimated include the regression coefficients β_i and the cut-point parameters $\mu_{i,1}, \mu_{i,2}, \cdots, \mu_{i,J-1}$.[10]

The ordered-probit model produces estimates of the discrete probability distribution of one-year employment status transitions from state i to state j, conditional on X_{ni}, and expressed in terms of the standard normal probability distribution.[11] In our approach these transition probabilities replace those estimated from occurrence-exposure rates in demographic applications. Separate models can be developed for each initial employment status i. Because the explanatory variable matrix includes age, it is possible to use the estimated ordered-probit model to generate a sequence of age-specific transition probability matrices for use as input to the multistate life table model. These age-specific transition matrices correspond to the values of $P_{ij}(x)$ in equation (1). By varying the values of other explanatory variables, the working life patterns for women with different characteristics (including different childbearing histories) can be explored by generating alternative multistate tables of working life.[12]

EMPIRICAL RESULTS

Empirical Specification of the Ordered-Probit Model

The dependent variables used in the ordered-probit regressions for employment status transitions were constructed from observed initial and final employment status categories over a one-year period, labelled INITIAL and FINAL, respectively. Employment status categories were defined on the basis of responses to questions on usual hours worked per week in consecutive NLS survey years. Five labor force status categories were identified: 0 hours

worked per week, 1 to 19 hours worked per week, 20 to 34 hours worked per week, 35 to 44 hours worked per week, and 45 or more hours worked per week.[13]

The selection of possible explanatory variables is motivated by the economic theory of household production and the opportunity cost of time outlined above. The final specification for the ordered-probit regressions and the estimated coefficients and asymptotic t-statistics for white and black women are reported in tables 1 and 2. The explanatory variables include a constant (CONSTANT); age (AGE); two-digit year of birth (COHORT); educational attainment in years (EDUC); a dummy variable (ENRL) equal to 1 if the woman is enrolled in school; a dummy variable (MSTAT1) equal to 1 if the woman is married with spouse present; a dummy variable (MSTAT2) equal to 1 if MSTAT1 changed from 1 to 0 over the age interval x to x+1; a dummy variable (MSTAT3) equal to 1 if MSTAT1 changed from 0 to 1 over the age interval x to x+1; the number of children ever born (CEB); a dummy variable (BLAST) equal to 1 if there was a birth during the previous year (between age x-1 and age x); and a dummy variable (BIRTH) equal to 1 if there was a birth during the age interval x to x+1. Except when a variable records a change over a given interval, each explanatory variable is recorded as the value at the initial survey date for the pair of surveys contributing to an observed transition. Each of these variables has been found to be important for the labor force behavior of women (see, for example, Cain and Dooley, 1976; Layard, Barton, and Zabalza, 1980; Link and Settle, 1981; Mott and Shapiro, 1983; Nakamura, Nakamura, and Cullen, 1979; Rosenzweig and Wolpin, 1980; Siegers and Zandanel, 1981; Shapiro and Mott, 1978; Weller, 1977).[14]

Each column in table 1 and table 2 represents the results of a separate ordered-probit regression for the subsample of women in each initial

employment status. The estimated regression coefficients have the same interpretation as those from a binary-probit regression. However, unlike the binary-probit model, where the number of states is two and the only cut-point is fixed at zero, the ordered-probit models estimated here include the estimated cut-point parameters given by $\mu_{i,2}$, $\mu_{i,3}$, and $\mu_{i,4}$, in addition to $\mu_{i,1}=0$. In the binary-probit model the estimated regression function gives the conditional mean of a normal probability distribution that is used to assign the probability of being in one state or the other. A positive slope coefficient implies that the corresponding variable increases the probability associated with the upper-tail probability, and vice versa. The same is true in the ordered-probit model, except that rather than having only two tail probabilities, we have a number of probabilities associated with the regions under the normal probability density function defined by the successive cut-point parameters. However, the estimated regression coefficients still indicate how variation in each explanatory variable will shift the location of the normal distribution that determines the probability of observing a given final employment status for each initial employment status group. Thus, in terms of the qualitative impact of particular variables on labor supply, the regression results in tables 1 and 2 can be interpreted in the same manner as those of a normalized regression function for hours of market work.

Focusing first on the effects of the fertility variables CEB, BLAST, and BIRTH in tables 1 and 2, it is clear that both the event of a birth and the accumulation of children reduce the level of labor force participation. For both white and black women, BIRTH has a substantial and consistently negative impact on usual hours worked across all initial employment statuses, and the absolute value of the coefficient on BIRTH generally increases with the

initial level of labor supply. The impact of a birth is evidently short lived, however, as BLAST is statistically significant only for white women initially not employed. Cumulative fertility measured by children ever born has a small negative impact on the labor supply of both white and black women. For white women the negative effect of children ever born on labor supply is between five and ten percent as large as the effect of having a current birth. In addition, the coefficients on BIRTH for black women are substantially smaller than those for white women, particularly for women initially working less than 35 hours per week. Taken together, these results imply that the occurrence of a birth has a significant, but largely one-time negative effect on female labor supply that is concentrated in the year the birth takes place. Beyond that, fertility exerts a moderate but persistent negative influence on labor supply through the gradual accumulation of children reflected in the number of children ever born.[15]

Labor supply is more likely to increase for older women (AGE) and for those born into more recent cohorts (COHORT). The only exception to this appears to be black women initially nonemployed, perhaps reflecting the persistence of poverty among this group of women. The older an initially nonemployed black woman, the less likely she is to make a transition to market work. Similarly, more recent cohorts of nonemployed black women are less likely to increase their labor supply.

Previous human capital investments in the form of education (EDUC) are positively related to the probability that a woman increases her level of labor force participation. This is true for both white and black women and for all initial employment statuses. Current school enrollment (ENRL) has a substantial negative impact on labor supply, reflecting the fact that market

work and schooling are competitive activities in the time budgets of most individuals.

Marital status and marital status changes as measured by MSTAT1, MSTAT2, and MSTAT3, respectively, also have substantial impacts on labor force status transition probabilities. We anticpated that being married with spouse present would be negatively related to the usual number of hours worked per week, that moving out of marriage would increase labor supply, and that movements into marriage would reduce hours worked. The fact that married women specialize in household production more often than their spouses suggests that married women are more likely to their reduce labor supply at any age, holding other factors constant. Conversely, separation and divorce have been observed to be associated with higher levels of labor supply, leading one to anticipate that movement into this marital status will result in an increase in hours worked.

Focusing first on the results for white women in table 1, we see that being married with spouse present (MSTAT1=1) is associated with reductions in labor supply at all initial levels of participation. When white women move from marriage to another marital status (separated, divorced, widowed), there is a tendency to increase labor supply as indicated by the estimated positive coefficients for MSTAT2. Marital status changes in the other direction, measured by MSTAT3, lead to reductions in the usual number of hours worked for white women who are employed more than 35 hours per week, whereas initially nonemployed white women tend to increase their labor supply when moving into the married state.[16]

The results for black women do not conform to our expectations. Being married decreases labor supply for black women who are initially employed 45

or more hours per week. For nonemployed black women the opposite is true. The labor supply of black women is also less responsive to marital dissolution than it is for white women, and it behaves in a manner opposite that of white women. For example, black women employed between 1 and 19 hours per week reduce their hours of market work in response to movements out of marriage. The estimated coefficients on MSTAT3 follow a pattern similar to those for white women — moving into the married state increases the labor supply of nonemployed black women, and decreases the labor supply of black women employed 35 hours or more per week.

Empirical Specification of the Human Capital Earnings Model

To value the time women lose from market work as a consequence of childbearing and childrearing, it is necessary to estimate female earnings functions. A two-stage estimation procedure was used.[17] The first stage requires estimation of a binary-probit model for labor force participation, that is, for whether a woman had zero or positive weekly hours of work. The results from the binary-probit regression are then used to form an additional regressor, INVMR, that accounts for the effect of selective non-participation in market work that could bias the earnings functions estimated using only observations on working women (those for whom observed wages are available).

The results of the binary-probit regressions for white and black women are reported in table 3. The dependent variable equals one when a woman is nonemployed (INITIAL=1), and equals zero otherwise.[18] With the exception of marital status and marital status changes, the estimated coefficients for white and black women exhibit a number of similarities. The variables AGE, COHORT, and EDUC are negatively related to the probability of nonemployment. The fertility variables CEB, BLAST, and BIRTH increase the likelihood that a

woman is nonemployed. Women married with spouse present (MSTAT1=1) are more likely to be nonemployed regardless of race, although the relationship is stronger for whites than for blacks. Marital status change variables MSTAT2 and MSTAT3 have different effects for whites and blacks. Marital dissolutions reduce the probability that a black women is nonemployed, but have no effect on white women. On the other hand, becoming married with spouse present reduces the probability a white woman is nonemployed and has no effect for black women. Finally, current school enrollment ENRL has a substantial positive effect on the probability that a women of either race is nonemployed.

Wage Estimation Results

The results of the analysis to estimate the female wage equations are reported in table 4. The natural logarithm of the hourly wage rate (LNWAGE) is the dependent variable. The log-linear specification implies that the estimated coefficients give the percentage change in the hourly wage that results from a one unit change in a specific explanatory variable. For white women, real hourly earnings increase nonlinearly with AGE and peak at around age 41. Black female hourly wage rates increase very slowly with AGE, less than one percent per additional year of age. Cohort trends in hourly wages are negligible for white women, but black women show a statistically significant positive coefficient on COHORT. The rate of return to each additional year of schooling is roughly 7 percent for white women, and 8 percent for black women. Current investments in education (ENRL) are associated with reductions in current hourly earnings of between 14 and 18 percent, most likely as a result of women taking lower-paying part-time jobs that offer more flexible schedules. Previous years of labor force experience

(YRW) have a modest upward impact on the real hourly earnings of white women -- between 1 and 2 percent per year -- and a negligible effect for black women. Recent labor force experience has a strong and positive impact on the wages of both white and black women. For whites, having worked more than six months in the past year (DUR=1) is associated with differences in hourly wage rates on the order of 20 to 25 percent. For black women, recent labor force experience increases hourly wages 16 to 20 percent.[19]

Multistate Tables of Working Life

We are now able to exploit the advantages of a regression framework for estimating transition probabilities to determine the impact of variation in the level and timing of fertility on the multistate table of working life. As age is varied to generate a sequence of transition probability matrices, we can also vary the values of CEB, BLAST, and BIRTH to give any desired pattern of childbearing. By fixing the values or age patterns of the remaining covariates it is possible to isolate the effects of different fertility histories on the table of working life.

For example, tables 5 to 8 show the working life tables for white women, born in 1960, with 12 years of education, married continuously from age 23, and having zero, one, two, and three children, respectively. It is assumed that the first child is born when the mother is age 25, and that subsequent children are spaced two years apart. All women are assumed to be initially in employment status 1 (0 hours per week) at exact age 15.[20] The life table summaries provide age-specific values of the expected number of person years lived in each employment status, $L_i(x)$, and the expected person years remaining in each status, $T_i(x)$. These tables are the basis for computing the foregone hours of market work associated with different numbers of births.

Table 9 shows the estimated profiles of annual hours of market work and foregone hours at each level of fertility. Expected annual hours of market work for each final parity level are computed from the following formula:

$$H(x) = 500 \cdot L_2(x) + 1350 \cdot L_3(x) + 2000 \cdot L_4(x) + 2500 \cdot L_5(x), \qquad (4)$$

where H(x) is the expected number of hours worked between ages x and x+1. The weights in equation (4) are the annual hours of market work associated with the midpoint of each employment status category (assuming 50 weeks per year, and 50 hours per week as the midpoint value for employment status 5). Values for $L_i(x)$ come from tables 5 to 8, depending on the final parity level that is assumed. Foregone hours are computed in each case by comparing the annual hours of market work in the table for a given final parity to those for zero children.

The left side of table 9 gives the annual hours profiles for women in different final parity categories. The profiles are identical until age 25, when the first child is born. As reported in the right side of table 9, market work is reduced by 256 hours in the year the birth occurs, from 1397 hours to 1141 hours. In the following year the difference is even greater. Annual hours of market work from age 26 to 27 are estimated to be 1435 for a childless woman, whereas a woman that has a birth at age 25 experiences a further reduction in annual hours to 1022. This difference of 413 hours represents more than ten weeks of full-time employment. For women bearing an only child, hours of work begin to rise in the third year following the birth, but remain below those of childless women throughout the rest of their working lives. The cumulative result to age 55 is a difference of 2169 hours, as

reported in the last row on the right side of table 9. The results for women bearing two and three children are also reported in table 9. The marginal impact of a second and third child is reported in the last two columns. There is a slight decline in foregone hours of market work attributable to births of successively higher order, but overall, the total reduction in hours is more or less proportional to the number of children. Note also that fifty percent of the impact of each child on foregone lifetime hours of market work occurs within the first five years following the birth of the child.

Opportunity Expenditure Estimates

The final step in estimating opportunity expenditures on children is to convert the foregone hours of market work in table 9 into estimates of foregone income. This task is accomplished by multiplying the expected age-specific hours of market work, $H(x)$, by the corresponding age-specific hourly wage that women could earn, predicted on the basis of the results in table 4. Table 10 shows the resulting earnings profiles and foregone earnings at each level of fertility for white women.[21] The effect of children on foregone earnings is more prolonged than the impact on foregone hours of market work. Fifty percent of the total impact of each child on foregone market earnings occurs only after about ten years following a birth. This result arises from the fact that potential hourly earnings continue to increase with age as a woman gains additional labor market experience. After an initial sharp decline in age-specific foregone earnings, the increase in hourly earnings combines with the modest hours reductions that occur after the first five years to produce a gradually increasing level of foregone earnings.

Similar procedures were used to produce estimates of foregone hours and foregone earnings for white and black women aged 15 to 55, with different background characteristics and childbearing patterns. Table 11 presents these estimates for women bearing one, two, or three children.[22] Foregone earnings are expressed in constant 1981 dollars, for the 1940, 1950, and 1960 birth cohorts of women, educated 12, 16, and 20 years, and bearing their first child at age 25. As before, we assume that all births are spaced two years apart and that all women are continuously married from age 23.

One of the most striking features of table 11 is the large racial difference in the foregone hours and earnings that can be attributed to childbearing. Foregone hours of white women are generally two-to-three times those of black women. For white women, foregone earnings from market work are from four to six and one-half times greater than those of black mothers. The way in which fertility impinges on labor supply is obviously much different for the two groups. Black mothers, who earn less than whites to begin with, are also less likely than white women to reduce their hours of market work in response to fertility.

The results in table 11 indicate that opportunity expenditures have been declining for more recent cohorts of women in given education and final parity categories. For example, white women born in 1940, having a high school education, and bearing two children have projected reductions in labor supply and earnings of 5721 hours and $61,536, compared to childless women. The corresponding figures for white women born in 1960 are 4268 hours and $43,809 -- a decline in hours and dollars of 25 and 28 percent, respectively. The results are not as uniform for blacks. For high-school educated black women, foregone hours appear to have increased between 1940 and 1950 and declined

thereafter, whereas foregone earnings have generally increased. Both foregone hours and earnings of black women educated 16 or 20 years have declined over time, following the trend for whites.

Higher levels of education are associated with fewer foregone hours and greater foregone earnings for both white and black women, consistent with the predictions of the household production model and the implications of the human capital earnings theory. Better-educated women reduce labor supply less than less-educated women with the birth of a child, but this lower reduction is more than offset by the higher potential hourly earnings by better-educated women, so their foregone earnings are greater.

Foregone hours and earnings increase almost proportionally with the number of children ever born. The results of the ordered-probit analysis of employment status transitions suggest that the occurrence of a birth has a much larger initial impact on labor supply than the cumulative number of births. Changes in the values of BLAST and BIRTH for successive births act more or less equally and independently on the transition probabilities. This conclusion appears to run counter to findings from other studies showing that the marginal time costs of additional children decline with birth order (for example, Turchi, 1975). However, the economies of scale that exist in the allocation of time to the care of children in the home are not available to women withdrawing from market work to bear children. Market work and childbearing are not joint activities in the way that housework and child care might be.[23]

Additional simulations were performed to examine the relationship between the timing and spacing of births and opportunity expenditures on children. Table 12 presents results for women from the 1960 birth cohort who bear their

first child at age 21, 25, or 31. For white women, delaying the first birth is associated with reductions in lifetime opportunity expenditures. The results for black women are substantially different. Whereas there is almost no effect of delayed childbearing on foregone hours, the return to additional years of labor force experience gained by delaying the first birth increases expected hourly earnings, resulting in a modest increase in foregone earnings.

Variation in the spacing of births has only a small effect on foregone hours and earnings. In table 13 we report the results for women in the 1960 birth cohort, having their first birth at age 25, and spacing births 1, 2, 3, and 5 years apart. There are slight reductions in the opportunity expenditures of white women and slight increases in the expenditures for black women as the interval between successive births widens.

SUMMARY AND CONCLUSIONS

The approach presented in this study to estimate opportunity expenditures on children extends research in this area in several ways. First, the multistate life table provides a technique for describing the work-inhibiting effects of children over the full working life of women. Previous estimates of expenditures on children have been confined to a limited age range of children -- usually from birth to age 18. The multistate life table models developed here are based on the fertility and labor force behavior of mothers aged 15 to 55. Moreover, the tables of working life estimated here are based on five states corresponding to nonemployment and four different levels of part-time and full-time employment, in contrast to the conventional, yet more limiting, two-state tables of working life that distinguish only between in the labor force and out of the labor force. Second, using the ordered-probit regression model to estimate labor force status transition probability functions provides additional flexibility in considering the simultaneous influence of several variables related to education, marriage, and childbearing, and represents a significant improvement over ratio estimators derived from occurrence-exposure rates. Finally, by using panel data we are able to generate opportunity expenditure estimates on a cohort basis. An important advantage of the cohort approach is its ability to identify past trends and to use these to project future expenditures. Also, panel data allow for a more accurate and comprehensive assessment of the impact of childbearing on the labor supply of individual women.

Because of this last feature, the estimates of opportunity expenditures presented here are generally much lower than other estimates. With the exception of Cramer (1979), previous studies have been based on cross-section

data containing observations on women at different parities and levels of labor force participation. The relationship between hours of work and the number of children in the cross-section will overestimate the work-reducing effects of children when women at higher parities do not work for other reasons, such as differences in human capital and potential earnings. The multistate life table approach used to summarize the life-cycle implications of transitions between labor force statuses also accounts for transitions that occur for reasons unrelated to childbearing, and avoids overstating the impact of children on female labor supply.

The new evidence on opportunity expenditures presented here can be combined with estimates of direct expenditures on children to provide a more complete picture of the impact of children on household budgets.[24] In a typical middle-class American family with two children, the total financial impact of each child is approximately $104,000 (in 1981 dollars) from birth to age 18, with direct expenditures making up about 80 percent of the total. Direct expenditures for white and black families at the same socioeconomic status are quite similar, in contrast to the large racial differences in opportunity expenditures. Within racial groups, direct expenditures on children vary a great deal more across socioeconomic status than do opportunity expenditures.[25]

Our findings indicate that the negative impact of children on the labor market hours and earnings of women has been declining over time. Viewed another way, this conclusion suggests that parental time investments in children may now be smaller than in the past.[26] In some instances market substitutes for parents' time may be available in the form of direct expenditures on goods and services related to child care. However, the

adequacy of day care and its long-term effects on children are subjects of continuing research and policy concern. A great deal of research has been done on the separate questions of time and money expenditures on children. What is needed now is further analysis of the impacts on children and their subsequent development of the changing balance, or emerging imbalance, between these two forms of expenditures, brought about by recent developments in female labor force behavior, family structure dynamics, and trends in childbearing.

NOTES

1. The household production model is not without its critics (Pollack and Wachter, 1975), but nearly all subsequent work on the economic determinants of fertility and female labor supply has been based on a variant of this conceptual framework.

2. The terms "opportunity cost" and "opportunity expenditure" are used more or less interchangeably in discussing previous work in this area. In almost all cases, the quantity referred to is estimated from observable differences in the allocation of time to market work, housework, and leisure that are associated with childbearing, and do not represent the technological minimum or "input requirement set" corresponding to a true "cost function," as this term would normally be used by economists.

3. The increase in opportunity expenditures from 1972 to 1977 and 1977 to 1980 is the result of an increase in nominal wages and does not imply an increase foregone earnings, net of inflation.

4. There is some debate in the literature over the correct hourly wage to use in valuing the time devoted to housework, and a number of methods for valuing household services have been proposed (Hawrylyshyn, 1976; Murphy, 1978; Ferber and Birnbaum, 1980; Chiswick, 1982). These include using the wage rate the woman would earn working an additional hour in her usual job, the wage rate that would be required to pay someone else to perform the housework instead, and various average occupational wage rates for tasks requiring similar skills.

5. Despite the added flexibility provided by the Markov chain formulation of the increment-decrement life table model, there are important restrictive assumptions underlying the use of this framework. One assumption is that there is an absence of duration dependence and prior state dependence. The transition intensities underlying specific increments and decrements are assumed to depend only on the state occupied at age x and not on the waiting time or duration in that state or on states occupied at prior times. It is also assumed that all members of state i at age x face the same set of transition intensities and, in particular, that individuals are homogeneous with respect to unobserved characteristics.

6. A method for computing P(x) that allows for multiple transitions (Option 3 in Willekens and Rogers, 1978) is given by the following matrix equation:

$$P(x) = [I - (1/2)M(x)][I + (1/2)M(x)]^{-1}, \qquad (N.1)$$

where M(x) is the relevant matrix of occurrence-exposure rates. This equation assumes that the distribution of decrements and increments over the interval x to x+1 is uniform, so that the underlying transition rates satisfy the so-called "linear integration hypothesis" (Hoem and Jensen, 1982, p. 160). The linear integration hypothesis has been criticized because of the occasional tendency to produce unreasonable results. Hoem and Jensen claim that the implied transition intensity

functions can sometimes be negative or lead to positive intensities between states i and j where a direct transition is impossible (for example, for single to divorced in a marital status life table model). In other instances, the application of equation (N.1) can produce transition probability matrices with negative elements or elements that exceed unity, as demonstrated by Nour and Suchindran (1984) using data from Schoen and Nelson (1974) on marital status transition rates by five-year age groups for U.S. males in 1960. Other examples are provided by Hoem and Jensen.

7. NLS data for successive survey years were used to construct observed transitions between employment statuses defined in terms of usual hours worked per week. The sample was then stratified into subsamples based on initial employment status. This approach is analogous to that used in computing occurrence-exposure rate estimates for use in conventional multistate life tables. For example, see Willekens and Rogers (1978).

8. The sample likelihood for N_i persons initially in state i and distributed over final states j=1,2,...,J is given by:

$$L_i = \prod_{n=1}^{N_i} \prod_{j=1}^{J} P_{nij}^{I_{nij}},$$

where P_{nij} is the probability that individual n is observed to make a transition from i to j. The variable I_{nij} is an indicator variable that takes the value one when a transition from i to j is observed for individual n, and zero otherwise. When the transition probabilities are assumed to depend functionally on age and other characteristics of the individuals in the sample we have,

$$P_{nij} = P_{nij}(X_{ni}),$$

where X_{ni} is a vector of socioeconomic and demographic characteristics specific to the date at which the initial employment status is recorded, or the interval over which the transition is defined.

9. An alternative normalization is given by $\sigma_i^2 = 1$ and:

$$\sum_{j=1}^{J} \mu_{i,j} = 0.$$

10. The assumptions made thus far imply that $P_{nij}(X_{ni})$ has the following form:

$$P_{nij}(X_{ni}) = \begin{cases} \int_{-\infty}^{-X_{ni}\beta_i} \phi(u)du & j=1, \\ \int_{\mu_{i,j-1}-X_{ni}\beta_i}^{\mu_{i,j}-X_{ni}\beta_i} \phi(u)du & j=2,3,\ldots,J-1, \\ \vdots & \\ \int_{\mu_{i,J-1}-X_{ni}\beta_i}^{\infty} \phi(u)du & j=J, \end{cases}$$

where $\phi(u)$ is the standard normal probability density function.

11. Programs for maximum likelihood estimation of the ordered-probit model include CRAWTRAN (Avery, 1980) and LIMDEP (Greene, 1983). Both programs use the Davidon-Fletcher-Powell algorithm (Fletcher and Powell, 1963) programmed by Gruvaeus and Joreskog (1970). CRAWTRAN was used in this study.

12. The computer program LIFEINDEC, adapted from the life table program in Willekens and Rogers (1978), and documented in Willekens (1979), estimates the transition matrices and related functions of the multistate increment-decrement life table model from observed occurrence-exposure rates. The program allows the number of non-zero radices, $l_i(0)$, to differ from the number of states J. This is convenient for the analysis of labor force transitions and allows us to assume that individuals start off nonemployed at exact age 15. Input data for the LIFEINDEC program usually consist of either absolute numbers of people in each state and transitions between states, or transition rates (occurrence/exposure rates), from which transition probabilities are calculated. As discussed in the text, this segment of the program has been bypassed in order to input estimates of transition probabilities based on the ordered-probit regression model for employment status transitions. Given a sequence of age-specific transition probability matrices, all other life table functions can be determined using the LIFEINDEC program. Two summary measures generated by LIFEINDEC are particularly useful in the analysis of labor force behavior. One is the number of person years lived in each employment status between exact ages x and x+1, given by $L_i(x)$ for employment status i, and computed using equation (1) in the text and the following equation from Willekens and Rogers (1978, p.34):

$$L_i(x) = (1/2)[l_i(x) + l_i(x+1)], \qquad i=1,2,\ldots,J.$$

The second summary measure used is the number of person years remaining to be lived in each employment status, given by:

$$T_i(x) = \sum_{a=x}^{\omega} L_i(a), \qquad i=1,2,\ldots,J,$$

where ω is the maximum age for which the life table is calculated.

13. INITIAL and FINAL each take the values 1,2,..., 5 — a value of 1 for 0 hours per week, a value of 2 for 1 to 19 hours per week, and so on, up to a value of 5 for more than 45 hours per week. The hours categories were selected after tabulating and examining the data for natural break points.

14. In preliminary work, we also experimented with including total family income and the respondent's wage and salary income as explanatory variables. A preponderance of missing and incomplete data, and the problem of selecting appropriate time paths for subsequent simulations, led us to drop these variables from the analysis. It should also be noted that because income and age are so highly correlated, income adds little to the explanatory power of the regressions once age is included. The fertility variables CEB, BLAST, and BIRTH were selected, after some experimentation, over measures of the number of children in specific age groups (for example, the number 0 to 5, 6 to 11, and 12 to 17) for two reasons. First, data on the ages of children in the NLS are based on household records in which natural children are not always distinguished from other children. This makes it difficult to determine if and when the mother gave birth to a specific child. Second, preliminary regressions indicated that these measures do not produce results that are as consistent as those based on current and past fertility experience. Thus, in this study the focus is on the impact of fertility, rather than of family structure, on labor force behavior.

15. Attempts at interacting CEB and AGE did not produce significant results, indicating that the residual effect of previous births does not tend to decline with age.

16. Attempts at interacting the marital status variables with CEB did not result in any statistically significant relationships.

17. The method of Heckman (1976) is used. This model and other related procedures are described in a recent survey of limited dependent variable techniques by Maddala (1983).

18. Estimation was carried out using the full sample of observations based on all observed initial employment statuses, and for a random sample that includes only one observation per individual. A computer program was written to use a random number generator based on the uniform distribution to select one observation per individual. Random samples were used in order to avoid the statistical complications of modeling limited dependent variables in a longitudinal sample. For the purposes of comparison, the estimation of wage equations was also carried out

using the full samples, ignoring the potential dependence among repeated observations on individuals. As table 3 shows, there is almost no difference between the results based on random and full samples.

19. Sample selectivity is found to have a modest, but statistically significant, impact on the conditional mean of LNWAGE as indicated by the estimated coefficients for INVMR in table 4.

20. A computer program was written that allows one simply to select the age of the women when each birth occurs, the ages at which movements into or out of marriage occur, and the other fixed background characteristics of the woman. School enrollment is assumed to occur until age is equal to EDUC+6 years. The program then uses the estimated coefficients from tables 1, 2, 3, and 4 to generate predicted transition probabilities and earnings functions. The transition probabilities are passed to the LIFEINDEC program which generates the multistate tables of working life for women bearing zero, one, two, or three children.

21. The results from table 4 based on random selection of a single observation for each individual in the pooled sample were used to generate the earnings profiles. The predicted earnings profiles also depend partly on the working life history implied by tables 5 to 8. Predicted values of years of work experience (YRW) and whether or not the woman worked more than six months in the previous year (DUR) were computed from the corresponding table of working life using the appropriate values of $L_i(x)$ and $T_i(x)$. Previous years spent in each employment status can be determined from $T_i(15)-T_i(x)$, for $i=1,2,\ldots,5$. The predicted value of DUR is one when $L(x-1)$ is greater than .5, and zero otherwise.

22. To see the relationship between table 11 and tables 5 to 10, locate the results for white women born in 1960 in table 11. The hours and dollars figures reported there correspond to the totals on the bottom row of the right side of tables 9 and 10. Thus, the results for every race-education-cohort combination in table 11 are derived from a set of six tables analogous to those discussed in the text.

23. It should be kept in mind that the multistate tables of working life in tables 5 to 8, and those underlying table 11, are all estimated under the assumption of zero mortality. This increases the expected number of person years lived in each employment status at each age over the number that would be experienced by actual persons subject to the risks of death. The effect is small, however, because mortality rates are low over the ages 15 to 55. Moreover, the purpose of these estimates is to give parents some notion of the economic costs they are likely to confront, net of their own mortality. The tables in the example also assume that women marry at age 23 and stay married. This implies that the estimated tables of working life are net of separation, divorce, and widowhood. Marital disruption, however, has an impact on estimated opportunity expenditures. For instance, if the woman in our example divorces at age 30, her estimated foregone hours and market earnings attributed to children are reduced by between 8 and 13 percent: for one-child families from 2,169 hours and $22,247 to 1,921 hours and $20,271,

for two-child families from 4,268 hours and $43,809 to 3,746 hours and $39,616, and for three-child families from 6,297 hours and $64,644 to 5,466 hours and $57,812. These results do not imply that children born to women who subsequently divorce are less costly. Rather, the example demonstrates that other life-cycle transitions that affect labor force behavior do have an effect on the earnings differentials that can be attributed to bearing and rearing children.

24. For recent estimates of direct expenditures on children in the United States see Espenshade (1984).

25. See Espenshade and Calhoun (1986), for additional comparisons of direct and opportunity expenditures on children.

26. If they are not, time spent with children comes at the expense of leisure and other aspects of household production.

REFERENCES

Avery, R. "Qualitative Dependent Variable Program CRAWTRAN." Carnegie-Mellon University, March 1980.

Becker, G. S. "A Theory of the Allocation of Time." Economic Journal 75:493-517, 1965.

_____. Human Capital. Chicago, Illinois: University of Chicago Press, 1975.

_____. A Treatise on the Family. Cambridge, Massachusetts: Harvard University Press, 1981.

Ben-Porath, Y. "The Production of Human Capital and the Life Cycle of Earnings." Journal of Political Economy 75:352-365, 1967.

_____. "The Production of Human Capital over Time." In W. Lee Hansen (ed.), Education, Income, and Human Capital. New York, New York: National Bureau of Economic Research, 1970.

Bowen, W., and Finegan, T. The Economics of Labor Force Participation. Princeton, New Jersey: Princeton University Press, 1969.

Cain, G.G. and Dooley, M.D. "Estimation of a Model of Labor Supply, Fertility, and Wages of Married Women," Journal of Political Economy, 84(4):S179-S199, 1976.

Chiswick, C. "On Estimating Earnings Functions in LDCs," Journal of Development Economics, 4(March):67-78, 1977.

_____. "The Value of a Housewife's Time," Journal of Human Resources, 17(3):413-425, 1982.

Corcoran, M., and Duncan, G.J. "Work History, Labor Force Attachment, and Earnings Differences Between Races and Sexes." Journal of Human Resources, 14:3-20, 1979.

Cramer, J. C. "Employment Trends of Youth Mothers and the Opportunity Costs of Babies in U.S." Demography 16:177-198, 1979.

Du Pasquier, L. G. "Mathematische theorie der invalidatatsversicherung." Mitt. Ver. Schweitzer, Versicherungsmath 7:1-7, 1912.

_____. "Mathematische theorie der invalidatatsversicherung." Mitt. Ver. Schweitzer, Versicherungsmath 8:1-153, 1913.

Espenshade, Thomas J. "The Value and Cost of Children." Population Bulletin 32, 1977.

_____. "Raising a Child Can Now Cost $85,000." Intercom 8(9):1,10-12, 1980.

_____. "Marriage, Divorce, and Remarriage From Retrospective Data: A Multiregional Approach." Environment and Planning A 15:1633-1652, 1983.

_____. "Investing in Children: New Estimates of Parental Expenditures. Washington, D.C.: The Urban Institute Press, 1984.

Espenshade, T.J., and Braun, R.E. "Life Course Analysis and Multistate Demography: An Application to Marriage, Divorce, and Remarriage." Journal of Marriage and the Family 44:1025-1036, 1982.

Espenshade, T.J. and Calhoun, C.A. "The Dollars and Cents of Parenthood," Journal of Policy Analysis and Management, 5(4):813-817, 1986.

Ferber, M.A. and Birnbaum, B.G. "Housework: Priceless or Valueless?" Review of Income and Wealth, 26(December):387-400, 1980.

Fletcher, R., and Powell, M.J.D. "A Rapidly Convergent Descent Method for Minimization." The Computer Journal 6:163-168, 1963.

Fix, E., and Neyman, J. "A Simple Stochastic Model of Recovery, Relapse, Death, and Loss of Patients." Human Biology 23:205-241, 1951.

Grabill, W. "Attrition Life Tables for the Single Population." Journal of the American Statistical Association 40:364-375, 1945.

Graunt, J. Natural and Political Observations Mentioned in a Following Index and Made upon the Bills of Mortality, London: Roycroft, 1662.

Greene, W.H. LIMDEP, Department of Economics, Graduate School of Business Administration, New York University, 1983.

Gruvaeus, G. T., and Joreskog, K.G. "A Computer Program for Minimizing a Function of Several Variables." Educational Testing Service, Princeton, New Jersey, 1970.

Halley, E. "An Estimate of the Degrees of the Mortality of Mankind," Philosophical Transactions of the Royal Society of London, 17, 1693.

Hawrylyshyn, O. "The Value of Household Services: A Survey of Empirical Estimates," The Review of Income and Wealth, 22(June):101-130, 1976.

Heckman, J. J. "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models." Annals of Economic and Social Measurement 5:475-492, 1976.

Hoem, J. "A Probabilistic Approach to Nuptiality." Biometrie-Praximetrie 11:3-9, 1970a.

_____. "Probabilistic Fertility Models of the Life Table Type." Theoretical Population Biology 1:12-38, 1970b.

Hoem, J.M., and Fong, M. "A Markov Chain Model of Working Life Tables: A New Method for Construction of Tables of Working Life." WP-2, Laboratory of Actual Mathematics, University of Copenhagen, Denmark, 1976.

Hoem, J. and Jensen, U.F. "Multistate Life Table Methodology: A Probabilist Critique." Pp. 155-264 in Kenneth Land and Andrei Rogers (eds.), Multidimensional Mathematical Demography. New York, New York: Academic Press, 1982.

Hofferth, S. L. "Children's Family Experience to Age 18." Study 3 of Longitudinal Analysis of Family and Household Structure, Final Report to NICHD, Contract No. NO1-HD-02849, 1984.

Illingworth, D. R. "Testing Some New Concepts and Estimation Methods in Population Accounting and Related Fields." Unpublished Ph.D. dissertation, School of Geography, University of Leeds, Leeds, England, 1976.

Jacobson, P. H. American Marriage and Divorce. New York, New York: Rhinehart, 1959.

Koesoebjono, S. "Nuptiality Tables for the Female Population of the Netherlands, 1978: An Application of Multidimensional Demography." WP-20, Interuniversity Demographic Institute, Voorburg, The Netherlands, 1981.

Koo, H.P., and Suchindran, C.M. "Relationships Among Fertility, Marital Dissolution, and Remarriage." Final report to NICHD, 1978.

Lancaster, K. J. "A New Approach to Consumer Theory." Journal of Political Economy 74 (April 1966):132-157.

Land, K. and Rogers, A. Multidimensional Mathematical Demography. New York, New York: Academic Press, 1982a.

_____. "Multidimensional Mathematical Demography: An Overview." Pp. 1-41 in Kenneth Land and Andrei Rogers (eds.), Multidimensional Mathematical Demography. New York, New York: Academic Press, 1982b.

Layard, R.; Barton, M.; and Zabalza, A. "Married Women's Participation and Hours," Economica, 47:51-72, 1980.

Ledent, J. "Constructing Multi-regional Life Tables Using Place-of-birth Specific Migration Data." In Andrei Rogers (ed.), Advances in Multiregional Demography, RR-81-6. Laxenburg, Austria: International Institute for Applied Systems Analysis, 1981.

Lindert, P. Fertility and Scarcity in America. Princeton, New Jersey: Princeton University Press, 1978.

Link, C.R. and Settle, R.F. "A Simultaneous-Equation Model of Labor Supply, Fertility and Earnings of Married Women: The Case of Registered Nurses," Southern Economic Journal, 47(4):977-989, 1981.

Maddala, G.S. Limited Dependent and Qualitative Variables in Econometrics, New York: Cambridge University Press, 1983.

McKelvey, R.D. and Zavoina, W. "A Statistical Model for the Analysis of Ordinal Level Dependent Variables," Journal of Mathematical Sociology, 4:103-120, 1975.

Mincer, J. "Labor Force Participation of Married Women: A Study of Labor Supply," in Aspects of Labor Economics, Universities—National Bureau of Economic Research. Princeton, New Jersey: Princeton University Press 1962.

_____. "The Distribution of Labor Incomes: A Survey." Journal of Economic Literature (March 1970).

_____. Schooling, Experience, and Earnings. New York, New York: Columbia University Press, 1974.

Mincer, J. and Ofek, H. "Interrupted Work Careers: Depreciation and Restoration of Human Capital." Journal of Human Resources 17 (1, 1982):3-24.

Mincer, J. and Polachek, S.W. "Earnings of Women." Journal of Political Economy 82:S76-S108, 1974.

Mott, F.L. and Shapiro, D. "Complementarity of Work and Fertility Among Young American Mothers," Population Studies, 37:239-252, 1983.

Murphy, M. "The Value of Non-Market Household Production: Opportunity Cost Versus Market Cost Estimates," Review of Income and Wealth, 24(September):243-256, 1978.

Muth, R. F. "Household Production and Consumer Demand Functions." Econometrica 34:699-708, 1965.

Nakamura, M.; Nakamura, A.; and Cullen, D. "Job Opportunities, the Offered Wage, and the Labor Supply of Married Women," American Economic Review, 69(5):787-805, 1979.

Nour, E.S. and Suchindran, C.M. "The Construction of Multi-state Life Tables: Comments on the Article by Willekens et al." Population Studies 38:325-328, 1984.

Oechsli, F. W. "A Population Model Based on a Life Table That Includes Marriage and Parity." Theoretical Population Biology 7:229-245, 1975.

Pollack, R. A., and Wachter, M.L. "The Relevance of the Household Production Function and its Implications for the Allocation of Time." Journal of Political Economy 85:255-277, 1975.

Preston, S., Keyfitz, N., and Schoen, R. Causes of Death: Life Tables for National Populations. New York, New York: Seminar Press, 1972.

Reed, R. H. and S. McIntosh, S. "Costs of Children." In E. R. Morss and R. H. Reed (eds.), Economic Aspects of Population Change. Washington, D.C.: Government Printing Office, 1972.

Rees, P. H. "Migration and Settlement: 1," United Kingdom, RR-79-3. Laxenburg, Austria: International Institute for Applied Systems Analysis, 1979.

Rogers, A. "The Mathematics of Multiregional Demographic Growth." Environment and Planning 5:3-29, 1973a.

_____. "The Multiregional Life Table." Journal of Mathematical Sociology 3:127-137, 1973b.

_____. Introduction to Multi-Regional Mathematical Demography. New York, New York: Wiley, 1975.

Rosenzweig, M.R. and Wolpin, K.I. "Life-Cycle Labor Supply and Fertility: Casual Inferences from Household Models," Journal of Political Economy, 88(21):328-348, 1980.

Sandell, S. H., and Shapiro, D. "The Theory of Human Capital and the Earnings of Women: A Reexamination of the Evidence." Journal of Human Resources 13:103-117, 1978.

Saveland, W. and Glick, P. "First Marriage Decrement Tables by Color and Sex for the United States in 1958-1960." Demography 6:243-260, 1969.

Schoen, R. and Land, K. "A General Algorithm for Estimating a Markov-Generated Increment-Decrement Life Table for Applications to Marital Status Patterns." Journal of the American Statistical Association 74:761-776, 1979.

Schoen, R. and Nelson, V.E. "Marriage, Divorce, and Mortality: A Life Table Analysis." Demography 11:267-290, 1974.

Schoen, R. and Woodrow, K. "Labor Force Life Tables for the United States, 1972." Demography 17:297-322, 1980.

Shapiro, D. and Mott, F.L. "Labor Force Attachment During the Early Childbearing Years: Evidence From The National Longitudinal Surveys of Young Women," Annales de l'Insee, 30-31:565-598, 1978.

Siegers, J.J. and Zandanel, R. "A Simultaneous Analysis of the Labour Force Participation of Married Women and the Presence of Young Children in the Family," De Economist, 129(3):382-393, 1981.

Smith, S. "Tables of Working Life for the United States, 1977: Substantive and Methodological Implications." Paper presented at the annual meetings of the Population Association of America, Denver, Colorado, 1980. Abstracted in Population Index 46, 1980.

_____. "Tables of Working Life: The Increment-Decrement Model," Bulletin 2135, Bureau of Labor Statistics, U.S. Department of Labor. Washington, D.C.: U.S. Government Printing Office, 1982.

Stone, R. Demographic Accounting and Model Building. Paris, France: Organization for Economic Cooperation and Development, 1971.

_____. Studies in Methods Series F, 18. Towards a System of Social and Demographic Statistics. New York, New York: Department of Economics and Social Affairs, Statistical Office, United Nations, 1975.

Suchindran, C. M. and Koo, H. "Divorce, Remarriage, and Fertility." Paper presented at the annual meetings of the Population Association of America, Denver, Colorado, 1980. Abstracted in Population Index 46, 1980.

Suchindran, C. M., Namboodiri, N.K., and West, K. "Analyses of Fertility by Increment-decrement Life Tables." Proceedings of the American Statistical Association, Social Statistics Section 1:431-436, 1977.

Sverdrup, E. "Estimates and Test Procedures in Connection With Stochastic Models for Deaths, Recoveries, and Tranfers Between Different States of Health." Skandinavisk Aktuarietidskrift 40:184-211, 1965.

Turchi, B. A. The Demand for Children: The Economics of Fertility in the United States. Cambridge, Massachusetts: Ballinger, 1975.

Weller, R.H. "Wife's Employment and Cumulative Family Size in the United States, 1970 and 1960," Demography, 14(1):43-65, 1977.

Willekens, F. Computer Programs for Increment-decrement (Multistate) Life Table Analysis: A User's Manual to LIFEINDEC, Working Paper WP-79-102, International Institute for Applied Systems Analysis, Laxenburg, Austria, 1979.

_____. "Multistate Analysis: Tables of Working Life." Environment and Planning A 12:563-588, 1980.

Willekens, F. and Rogers, A. Spatial Population Analysis:: Methods and Computer Programs. Laxenburg, Austria: International Institute for Applied Systems Analysis, RR-78-18, 1978.

Willekens, F., Shah, I., Shah, J.M. and Ramachandran, M.P. "Multi-state Analysis of Marital Status Life Tables: Theory and Application." Population Studies 36(1):129-144, 1982.

Wolf, D.A. "Models of Marital and Fertility Dynamics." Final report to NICHD, contract no. NO1-HD-02849. Washington, D.C.: The Urban Institute, 1984.

Table 1

Ordered-Probit Regressions for Employment Status Transition Probabilities: White Women[a]

Variable	Initial Employment Status (Usual Hours Worked per Week)[b] 0	1 - 19	20 - 34	35 - 44	45 +
CONSTANT	-2.5975	-3.4646	-1.9871		
	(-9.44)	(-10.62)	(-5.35)		
AGE	0.0097	0.0423	0.0366	0.0139	0.0048
	(2.58)	(8.33)	(6.85)	(9.54)	(1.51)
COHORT	0.0304	0.0518	0.0350		
	(7.66)	(12.92)	(7.52)		
EDUC	0.0526	0.0852	0.0588	0.0875	0.0982
	(10.04)	(8.68)	(5.75)	(25.77)	(13.57)
ENRL	-0.1672	-0.2357	-0.2415	-0.2076	-0.4183
	(-3.80)	(-3.22)	(-4.09)	(-3.53)	(-3.40)
MSTAT1	-0.3057	-0.4328	-0.3810	-0.2746	-0.5217
	(-7.69)	(-5.41)	(-6.17)	(-8.80)	(-7.71)
MSTAT2		0.4759	0.3437	0.2716	
		(2.12)	(2.12)	(3.06)	
MSTAT3	0.2071			-0.4423	-0.8629
	(3.41)			(-8.20)	(-6.46)
CEB	-0.0503		-0.0481	-0.0475	-0.0449
	(-5.61)		(-2.71)	(-4.39)	(-2.04)
BLAST	-0.1514				
	(-3.56)				
BIRTH	-0.5031	-0.6699	-0.8254	-0.8696	-0.7452
	(-9.69)	(-5.47)	(-7.87)	(-16.85)	(-5.89)
		Cut-Point Parameters			
$\mu_{i,1}$	0.0000	0.0000	0.0000	0.0000	0.0000
$\mu_{i,2}$	0.2154	1.1796	0.4057	0.1017	0.1367
	(27.96)	(41.02)	(18.81)	(13.82)	(6.97)
$\mu_{i,3}$	0.4362	1.7364	1.5327	0.3197	0.2794
	(38.95)	(52.06)	(46.33)	(26.81)	(10.53)
$\mu_{i,4}$	1.4266	2.9042	2.9610	2.9251	1.2900
	(50.05)	(53.45)	(54.44)	(102.07)	(28.63)
		Observed Transitions			
N_{i1}	11130	647	479	1111	260
N_{i2}	726	1232	312	184	46
N_{i3}	607	553	1157	462	54
N_{i4}	1290	560	806	6719	484
N_{i5}	200	81	89	451	558
N_i	13953	3073	2843	8927	1402
$-\ln L_i$	10021.80	4143.17	3756.96	7340.45	1682.10

[a]Asymptotic t-statistics in parentheses.

[b]Each column in the table corresponds to a separate ordered-probit regression using samples defined on the basis of initial employment status.

Table 2

Ordered-Probit Regressions for Employment Status Transition Probabilities: Black Women[a]

Variable	Initial Employment Status (Usual Hours Worked per Week) 0	1 - 19	20 - 34	35 - 44	45 +
CONSTANT		-3.5418 (-6.20)		-1.4108 (-3.49)	0.5208 (2.48)
AGE	-0.0301 (-17.89)	0.0436 (5.12)		0.0333 (5.82)	
COHORT	-0.0191 (-11.52)	0.0493 (6.47)	0.0081 (3.06)	0.0246 (4.41)	
EDUC	0.0872 (10.76)	0.0901 (5.70)	0.0536 (5.05)	0.0246 (5.65)	
ENRL	-0.1696 (-2.91)	-0.2555 (-2.16)		-0.2226 (-2.10)	
MSTAT1	0.1268 (2.81)				-0.2136 (-1.96)
MSTAT2		-0.5469 (-2.02)			
MSTAT3	0.1905 (1.97)			-0.2855 (-2.74)	-0.5118 (-2.09)
CEB				-0.0218 (2.13)	
BLAST					
BIRTH	-0.2757 (-4.32)	-0.3723 (-2.13)	-0.3805 (-2.42)	-0.5127 (-6.39)	-0.7111 (-3.94)
		Cut-Point Parameters			
$\mu_{i,1}$	0.0000	0.0000	0.0000	0.0000	0.0000
$\mu_{i,2}$	0.1565 (14.61)	1.1326 (22.00)	0.3868 (10.66)	0.0858 (7.86)	0.1934 (4.74)
$\mu_{i,3}$	0.3382 (21.15)	1.6271 (27.36)	1.3129 (23.82)	0.2935 (15.83)	-0.4206 (7.56)
$\mu_{i,4}$	1.3657 (31.09)	2.6688 (29.07)	2.7587 (29.15)	2.8921 (67.73)	1.4664 (17.66)
		Observed Transitions			
N_{i1}	3851	221	164	440	72
N_{i2}	202	355	99	60	21
N_{i3}	200	143	293	168	29
N_{i4}	565	157	259	2483	165
N_{i5}	85	28	28	150	143
N_i	4903	904	843	3301	430
$-\ln L_i$	3683.85	1228.98	1171.21	2718.23	569.59

[a]Asymptotic t-statistics in parentheses.

[b]Each column in the table corresponds to a separate ordered-probit regression using samples defined on the basis of initial employment status.

Table 3

Binary Probit Regressions for Non-Participation[a]

Variable	Parameter Estimates			
	White Women		Black Women	
	Random Sample[b]	Full Sample	Random Sample[b]	Full Sample
CONSTANT	6.3111	5.9202	5.8145	5.2704
	(23.78)	(34.53)	(12.840	(18.08)
AGE	-0.0830	-0.0778	-0.0698	-0.0588
	(-22.69)	(-33.50)	(-11.12)	(-14.76)
COHORT	-0.0953	-0.0825	-0.0791	-0.0573
	(-26.22)	(-34.45)	(-12.45)	(-13.83)
EDUC	-0.0656	-0.0873	-0.0907	-0.1350
	(-10.44)	(-22.30)	(-9.34)	(-21.87)
ENRL	0.5507	0.7630	0.4426	0.5805
	(11.91)	(26.03)	(5.64)	(12.31)
MSTAT1	0.5150	0.7109	0.1049	0.0534
	(12.58)	(28.25)	(1.940	(1.61)
MSTAT2			-0.2903	-0.2291
			(-2.12)	-2.72)
MSTAT3	-0.1500	0.1036		
	(-2.11)	(2.41)		
CEB	0.0787	0.1367	0.0179	0.0501
	(7.33)	(20.57)	(1.69)	(7.51)
BLAST	0.8173	0.7296	0.5479	0.6101
	(13.72)	(18.86)	(6.29)	(11.21)
BIRTH			0.3152	0.3624
			(3.82)	(7.11)
Total N	9919	24094	3192	8182
Dep. Var. = 1	3318	11318	1149	3994
Dep. Var. = 0	6601	12776	2043	4188
- ln L	5427.56	14195.30	1875.00	4962.04

[a]Asymptotic t-statistics in parentheses.

[b]Random sample of observations, one per individual, from pooled NLS sample.

Table 4

Wage Regressions: White and Black Women
Dependent Variable is Natural Log of Hourly Wage[a,b]

Variable	Parameter Estimates: White Women Random Sample[c]	White Women Full Sample	Black Women Random Sample[c]	Black Women Full Sample
CONSTANT	-0.1195	-0.1672		
	(-1.94)	(-3.93)		
AGE	0.0489	0.0474	0.0073	0.0068
	(9.09)	(15.85)	(5.68)	(7.43)
AGESQ[d]	-0.0006	-0.0007		
	(-9.63)	(-16.26)		
COHORT			0.0051	0.0055
			(5.94)	(7.91)
EDUC	0.0726	0.0699	0.0777	0.0818
	(27.31)	(37.89)	(19.72)	(27.65)
ENRL	-0.1508	-0.1781	-0.1414	-0.1822
	(-10.33)	(-16.750	(-4.99)	(-8.79)
YRW	0.0165	0.0139	0.0024	0.0030
	(12.83)	(16.97)	(1.53)	(2.82)
DUR	0.2011	0.2406	0.1610	0.1975
	(11.29)	(18.39)	(4.91)	(8.37)
INVMR[e]	-0.0357	-0.0570	-0.1032	-0.1175
	(-1.72)	(-4.82)	(-2.75)	(-5.08)

[a]Wages expressed in 1981 dollars.

[b]Asymptotic t-statistics in parentheses.

[c]Random sample of observations, one per individual, from pooled NLS sample.

[d]AGE squared.

[e]Predicted value of the inverse Mill's ratio, obtained from the binary probit regressions in Table 3. This variable is included to correct for possible sample selectivity.

Table 5

Estimated Multistate Table Of Working Life
For White Women Bearing Zero Children

PERSON YEARS LIVED IN EACH STATUS FROM AGE X TO X+1 : L(X)

AGE	EMPLOYMENT STATUS (USUAL HOURS WORKED PER WEEK) 0	1-19	20-34	35-44	45+
15	0.8131	0.0391	0.0356	0.0920	0.0201
16	0.5310	0.0842	0.0738	0.2327	0.0782
17	0.3862	0.0873	0.0759	0.3207	0.1298
18	0.2784	0.0756	0.0722	0.4031	0.1706
19	0.1968	0.0600	0.0648	0.4727	0.2057
20	0.1638	0.0495	0.0586	0.5149	0.2131
21	0.1496	0.0436	0.0554	0.5403	0.2110
22	0.1424	0.0404	0.0536	0.5553	0.2083
23	0.2353	0.0479	0.0641	0.5046	0.1479
24	0.3050	0.0593	0.0715	0.4512	0.1129
25	0.2684	0.0615	0.0675	0.4623	0.1401
26	0.2517	0.0600	0.0670	0.4768	0.1444
27	0.2417	0.0580	0.0663	0.4879	0.1460
28	0.2346	0.0561	0.0655	0.4968	0.1469
29	0.2289	0.0544	0.0648	0.5042	0.1477
30	0.2238	0.0528	0.0641	0.5107	0.1485
31	0.2190	0.0514	0.0634	0.5168	0.1494
32	0.2144	0.0500	0.0628	0.5224	0.1503
33	0.2099	0.0487	0.0621	0.5279	0.1514
34	0.2056	0.0475	0.0613	0.5332	0.1524
35	0.2014	0.0462	0.0606	0.5383	0.1535
36	0.1973	0.0451	0.0599	0.5432	0.1546
37	0.1933	0.0439	0.0591	0.5480	0.1557
38	0.1894	0.0428	0.0584	0.5526	0.1568
39	0.1855	0.0417	0.0576	0.5571	0.1580
40	0.1818	0.0407	0.0568	0.5615	0.1593
41	0.1781	0.0397	0.0560	0.5657	0.1605
42	0.1746	0.0387	0.0553	0.5697	0.1618
43	0.1711	0.0378	0.0545	0.5736	0.1631
44	0.1676	0.0369	0.0537	0.5773	0.1645
45	0.1643	0.0361	0.0529	0.5808	0.1659
46	0.1610	0.0353	0.0522	0.5842	0.1674
47	0.1578	0.0345	0.0514	0.5874	0.1690
48	0.1547	0.0337	0.0506	0.5905	0.1705
49	0.1517	0.0330	0.0499	0.5934	0.1722
50	0.1487	0.0323	0.0491	0.5961	0.1738
51	0.1458	0.0317	0.0484	0.5987	0.1755
52	0.1430	0.0310	0.0476	0.6011	0.1773
53	0.1402	0.0304	0.0469	0.6034	0.1791
54	0.1375	0.0299	0.0461	0.6055	0.1810

PERSON YEARS LIVED IN EACH STATUS FROM AGE X TO AGE 55: T(X)

AGE	EMPLOYMENT STATUS (USUAL HOURS WORKED PER WEEK) 0	1-19	20-34	35-44	45+
15	8.8444	1.8691	2.3373	20.6547	6.2944
16	8.0313	1.8300	2.3016	20.5627	6.2743
17	7.5004	1.7458	2.2279	20.3300	6.1961
18	7.1141	1.6584	2.1520	20.0093	6.0663
19	6.8357	1.5828	2.0798	19.6062	5.8956
20	6.6389	1.5228	2.0150	19.1335	5.6900
21	6.4751	1.4733	1.9564	18.6186	5.4769
22	6.3255	1.4297	1.9010	18.0783	5.2658
23	6.1831	1.3893	1.8474	17.5230	5.0576
24	5.9477	1.3413	1.7833	17.0183	4.9097
25	5.6427	1.2820	1.7118	16.5671	4.7968
26	5.3741	1.2205	1.6443	16.1048	4.6567
27	5.1226	1.1605	1.5773	15.6280	4.5123
28	4.8809	1.1025	1.5110	15.1401	4.3662
29	4.6463	1.0464	1.4455	14.6433	4.2193
30	4.4174	0.9920	1.3807	14.1391	4.0716
31	4.1936	0.9392	1.3166	13.6284	3.9231
32	3.9746	0.8878	1.2532	13.1116	3.7738
33	3.7602	0.8378	1.1904	12.5892	3.6234
34	3.5503	0.7890	1.1284	12.0611	3.4721
35	3.3447	0.7416	1.0670	11.5281	3.3197
36	3.1433	0.6954	1.0064	10.9898	3.1662
37	2.9460	0.6503	0.9466	10.4466	3.0116
38	2.7527	0.6064	0.8874	9.8987	2.8560
39	2.5634	0.5636	0.8291	9.3460	2.6991
40	2.3778	0.5219	0.7715	8.7889	2.5411
41	2.1961	0.4812	0.7146	8.2274	2.3818
42	2.0179	0.4415	0.6586	7.6617	2.2213
43	1.8434	0.4027	0.6033	7.0920	2.0595
44	1.6723	0.3649	0.5488	6.5185	1.8964
45	1.5047	0.3280	0.4951	5.9412	1.7319
46	1.3404	0.2919	0.4422	5.3604	1.5659
47	1.1794	0.2566	0.3900	4.7762	1.3985
48	1.0216	0.2221	0.3386	4.1888	1.2295
49	0.8669	0.1884	0.2880	3.5983	1.0590
50	0.7152	0.1554	0.2381	3.0049	0.8868
51	0.5665	0.1230	0.1890	2.4087	0.7130
52	0.4207	0.0914	0.1406	1.8100	0.5374
53	0.2777	0.0603	0.0930	1.2089	0.3601
54	0.1375	0.0299	0.0461	0.6055	0.1810

Table 6

Estimated Multistate Table Of Working Life
For White Women Bearing One Child At Age 25

PERSON YEARS LIVED IN EACH STATUS FROM AGE X TO X+1 : L(X)

AGE	EMPLOYMENT STATUS (USUAL HOURS WORKED PER WEEK) 0	1-19	20-34	35-44	45+
15	0.8131	0.0391	0.0356	0.0920	0.0201
16	0.5310	0.0842	0.0738	0.2327	0.0782
17	0.3862	0.0873	0.0759	0.3207	0.1298
18	0.2784	0.0756	0.0722	0.4031	0.1706
19	0.1968	0.0600	0.0648	0.4727	0.2057
20	0.1638	0.0495	0.0586	0.5149	0.2131
21	0.1496	0.0436	0.0554	0.5403	0.2110
22	0.1424	0.0404	0.0536	0.5553	0.2083
23	0.2353	0.0479	0.0641	0.5046	0.1479
24	0.3050	0.0593	0.0715	0.4512	0.1129
25	0.3858	0.0658	0.0690	0.3573	0.1121
26	0.4400	0.0707	0.0699	0.3130	0.1064
27	0.3495	0.0705	0.0703	0.3763	0.1334
28	0.2932	0.0663	0.0701	0.4263	0.1440
29	0.2657	0.0612	0.0682	0.4578	0.1471
30	0.2510	0.0574	0.0667	0.4780	0.1468
31	0.2418	0.0547	0.0656	0.4914	0.1464
32	0.2351	0.0527	0.0647	0.5009	0.1464
33	0.2295	0.0511	0.0640	0.5085	0.1468
34	0.2245	0.0497	0.0632	0.5149	0.1475
35	0.2199	0.0484	0.0625	0.5208	0.1484
36	0.2154	0.0472	0.0618	0.5263	0.1493
37	0.2111	0.0460	0.0611	0.5316	0.1503
38	0.2069	0.0448	0.0604	0.5366	0.1514
39	0.2027	0.0437	0.0596	0.5415	0.1525
40	0.1987	0.0427	0.0588	0.5462	0.1536
41	0.1948	0.0417	0.0581	0.5508	0.1547
42	0.1910	0.0407	0.0573	0.5552	0.1559
43	0.1872	0.0398	0.0566	0.5595	0.1571
44	0.1835	0.0389	0.0558	0.5636	0.1584
45	0.1799	0.0380	0.0550	0.5676	0.1597
46	0.1764	0.0372	0.0543	0.5713	0.1610
47	0.1729	0.0364	0.0535	0.5750	0.1624
48	0.1695	0.0356	0.0528	0.5785	0.1639
49	0.1662	0.0348	0.0520	0.5819	0.1653
50	0.1630	0.0341	0.0512	0.5850	0.1668
51	0.1598	0.0334	0.0505	0.5880	0.1684
52	0.1567	0.0327	0.0498	0.5909	0.1700
53	0.1537	0.0321	0.0490	0.5936	0.1717
54	0.1507	0.0315	0.0483	0.5962	0.1735

PERSON YEARS LIVED IN EACH STATUS FROM AGE X TO AGE 55: T(X)

AGE	EMPLOYMENT STATUS (USUAL HOURS WORKED PER WEEK) 0	1-19	20-34	35-44	45+
15	9.7780	1.9669	2.4055	19.7820	6.0686
16	8.9649	1.9278	2.3698	19.6900	6.0485
17	8.4339	1.8436	2.2961	19.4572	5.9703
18	8.0477	1.7562	2.2202	19.1366	5.8405
19	7.7693	1.6806	2.1480	18.7335	5.6698
20	7.5725	1.6206	2.0832	18.2608	5.4642
21	7.4087	1.5711	2.0246	17.7459	5.2511
22	7.2590	1.5275	1.9692	17.2056	5.0400
23	7.1166	1.4871	1.9156	16.6502	4.8318
24	6.8813	1.4392	1.8515	16.1456	4.6839
25	6.5763	1.3798	1.7800	15.6944	4.5710
26	6.1904	1.3141	1.7110	15.3271	4.4589
27	5.7505	1.2433	1.6412	15.0142	4.3525
28	5.4010	1.1728	1.5709	14.6379	4.2192
29	5.1078	1.1065	1.5008	14.2116	4.0751
30	4.8421	1.0454	1.4325	13.7537	3.9281
31	4.5911	0.9880	1.3658	13.2757	3.7813
32	4.3493	0.9333	1.3002	12.7844	3.6349
33	4.1143	0.8805	1.2355	12.2834	3.4885
34	3.8848	0.8294	1.1715	11.7750	3.3417
35	3.6602	0.7797	1.1083	11.2600	3.1942
36	3.4404	0.7313	1.0458	10.7392	3.0459
37	3.2250	0.6842	0.9840	10.2129	2.8965
38	3.0139	0.6382	0.9229	9.6814	2.7462
39	2.8070	0.5933	0.8625	9.1447	2.5949
40	2.6043	0.5496	0.8029	8.6033	2.4424
41	2.4055	0.5069	0.7441	8.0571	2.2888
42	2.2107	0.4652	0.6860	7.5063	2.1341
43	2.0197	0.4245	0.6287	6.9511	1.9782
44	1.8325	0.3847	0.5721	6.3916	1.8211
45	1.6490	0.3458	0.5164	5.8281	1.6627
46	1.4690	0.3078	0.4613	5.2605	1.5031
47	1.2926	0.2707	0.4071	4.6892	1.3421
48	1.1197	0.2343	0.3535	4.1142	1.1797
49	0.9502	0.1987	0.3008	3.5357	1.0158
50	0.7839	0.1639	0.2488	2.9538	0.8505
51	0.6210	0.1298	0.1975	2.3688	0.6836
52	0.4611	0.0964	0.1470	1.7807	0.5152
53	0.3044	0.0637	0.0973	1.1898	0.3452
54	0.1507	0.0315	0.0483	0.5962	0.1735

Table 7

Estimated Multistate Table Of Working Life
For White Women Bearing Two Children At Ages 25 and 27

PERSON YEARS LIVED IN EACH STATUS FROM AGE X TO X+1 : L(X)

AGE	EMPLOYMENT STATUS (USUAL HOURS WORKED PER WEEK) 0	1-19	20-34	35-44	45+
15	0.8131	0.0391	0.0356	0.0920	0.0201
16	0.5310	0.0842	0.0738	0.2327	0.0782
17	0.3862	0.0873	0.0759	0.3207	0.1298
18	0.2784	0.0756	0.0722	0.4031	0.1706
19	0.1968	0.0600	0.0648	0.4727	0.2057
20	0.1638	0.0495	0.0586	0.5149	0.2131
21	0.1496	0.0436	0.0554	0.5403	0.2110
22	0.1424	0.0404	0.0536	0.5553	0.2083
23	0.1353	0.0479	0.0641	0.5046	0.1479
24	0.3050	0.0593	0.0715	0.4512	0.1129
25	0.3858	0.0658	0.0690	0.3673	0.1121
26	0.4400	0.0707	0.0699	0.3130	0.1064
27	0.4608	0.0733	0.0683	0.2908	0.1068
28	0.4752	0.0742	0.0688	0.2771	0.1046
29	0.3735	0.0717	0.0711	0.3534	0.1301
30	0.3103	0.0665	0.0707	0.4105	0.1420
31	0.2794	0.0609	0.0687	0.4461	0.1449
32	0.2631	0.0569	0.0671	0.4684	0.1443
33	0.2531	0.0542	0.0659	0.4829	0.1436
34	0.2460	0.0522	0.0651	0.4931	0.1435
35	0.2402	0.0507	0.0643	0.5009	0.1439
36	0.2350	0.0493	0.0635	0.5075	0.1446
37	0.2302	0.0480	0.0628	0.5134	0.1454
38	0.2256	0.0469	0.0621	0.5189	0.1463
39	0.2212	0.0457	0.0614	0.5242	0.1473
40	0.2169	0.0446	0.0607	0.5293	0.1483
41	0.2127	0.0436	0.0600	0.5342	0.1493
42	0.2086	0.0426	0.0592	0.5390	0.1504
43	0.2046	0.0417	0.0585	0.5436	0.1516
44	0.2006	0.0408	0.0577	0.5481	0.1527
45	0.1967	0.0399	0.0570	0.5524	0.1539
46	0.1929	0.0390	0.0562	0.5566	0.1551
47	0.1892	0.0382	0.0555	0.5606	0.1564
48	0.1855	0.0374	0.0547	0.5645	0.1577
49	0.1820	0.0366	0.0540	0.5683	0.1590
50	0.1784	0.0359	0.0533	0.5719	0.1605
51	0.1750	0.0352	0.0525	0.5753	0.1619
52	0.1717	0.0345	0.0518	0.5786	0.1634
53	0.1684	0.0339	0.0510	0.5818	0.1649
54	0.1651	0.0333	0.0503	0.5848	0.1665

PERSON YEARS LIVED IN EACH STATUS FROM AGE X TO AGE 55: T(X)

AGE	EMPLOYMENT STATUS (USUAL HOURS WORKED PER WEEK) 0	1-19	20-34	35-44	45+
15	10.6894	2.0512	2.4565	10.9441	5.8548
16	9.8763	2.0121	2.4209	10.8521	5.8347
17	9.3453	1.9279	2.3471	10.6194	5.7565
18	8.9591	1.8405	2.2712	10.2987	5.6267
19	8.6807	1.7649	2.1990	17.8956	5.4561
20	8.4839	1.7049	2.1342	17.4229	5.2504
21	8.3201	1.6554	2.0756	16.9080	5.0373
22	8.1704	1.6118	2.0202	16.3677	4.8263
23	8.0280	1.5714	1.9667	15.8124	4.6180
24	7.7927	1.5235	1.9025	15.3077	4.4701
25	7.4876	1.4641	1.8311	14.8565	4.3572
26	7.1018	1.3984	1.7621	14.4893	4.2451
27	6.6618	1.3276	1.6922	14.1763	4.1388
28	6.2011	1.2544	1.6239	13.8855	4.0319
29	5.7259	1.1801	1.5552	13.6084	3.9273
30	5.3524	1.1084	1.4840	13.2550	3.7972
31	5.0421	1.0419	1.4133	12.8445	3.6553
32	4.7627	0.9811	1.3446	12.3984	3.5104
33	4.4996	0.9242	1.2775	11.9299	3.3661
34	4.2465	0.8700	1.2116	11.4470	3.2224
35	4.0005	0.8178	1.1465	10.9539	3.0789
36	3.7603	0.7671	1.0823	10.4531	2.9350
37	3.5253	0.7178	1.0187	9.9456	2.7904
38	3.2952	0.6698	0.9559	9.4322	2.6450
39	3.0696	0.6230	0.8938	8.9132	2.4987
40	2.8483	0.5772	0.8323	8.3890	2.3515
41	2.6314	0.5326	0.7717	7.8598	2.2032
42	2.4187	0.4889	0.7117	7.3256	2.0539
43	2.2101	0.4463	0.6525	6.7866	1.9035
44	2.0055	0.4046	0.5940	6.2430	1.7520
45	1.8049	0.3639	0.5363	5.6949	1.5993
46	1.6082	0.3240	0.4793	5.1425	1.4454
47	1.4153	0.2850	0.4230	4.5859	1.2902
48	1.2261	0.2468	0.3676	4.0253	1.1339
49	1.0405	0.2094	0.3128	3.4607	0.9762
50	0.8586	0.1728	0.2588	2.8925	0.8171
51	0.6801	0.1369	0.2056	2.3206	0.6567
52	0.5051	0.1017	0.1531	1.7453	0.4948
53	0.3335	0.0671	0.1013	1.1667	0.3314
54	0.1651	0.0333	0.0503	0.5848	0.1665

Table 8

Estimated Multistate Table Of Working Life
For White Women Bearing Three Children At Ages 25, 27, 29

PERSON YEARS LIVED IN EACH STATUS FROM AGE X TO X+1 : L(X)

AGE	EMPLOYMENT STATUS (USUAL HOURS WORKED PER WEEK) 0	1-19	20-34	35-44	45+
15	0.8131	0.0391	0.0356	0.0920	0.0201
16	0.5310	0.0842	0.0738	0.2327	0.0782
17	0.3862	0.0873	0.0759	0.3207	0.1298
18	0.2784	0.0756	0.0722	0.4031	0.1706
19	0.1968	0.0600	0.0648	0.4727	0.2057
20	0.1638	0.0495	0.0586	0.5149	0.2131
21	0.1496	0.0436	0.0554	0.5403	0.2110
22	0.1424	0.0404	0.0536	0.5553	0.2083
23	0.2353	0.0479	0.0641	0.5046	0.1479
24	0.3050	0.0593	0.0715	0.4512	0.1129
25	0.3858	0.0658	0.0690	0.3673	0.1121
26	0.4400	0.0707	0.0699	0.3130	0.1064
27	0.4608	0.0733	0.0683	0.2908	0.1068
28	0.4752	0.0742	0.0688	0.2771	0.1046
29	0.4827	0.0743	0.0683	0.2700	0.1046
30	0.4904	0.0737	0.0681	0.2644	0.1033
31	0.3882	0.0705	0.0708	0.3431	0.1274
32	0.3237	0.0653	0.0706	0.4014	0.1390
33	0.2919	0.0598	0.0687	0.4376	0.1419
34	0.2750	0.0561	0.0672	0.4602	0.1414
35	0.2647	0.0535	0.0661	0.4748	0.1408
36	0.2573	0.0517	0.0652	0.4850	0.1407
37	0.2513	0.0502	0.0645	0.4929	0.1411
38	0.2460	0.0489	0.0638	0.4996	0.1417
39	0.2411	0.0477	0.0631	0.5055	0.1426
40	0.2364	0.0466	0.0624	0.5111	0.1435
41	0.2319	0.0455	0.0617	0.5165	0.1444
42	0.2275	0.0445	0.0610	0.5216	0.1454
43	0.2232	0.0436	0.0603	0.5265	0.1465
44	0.2190	0.0426	0.0596	0.5313	0.1475
45	0.2149	0.0417	0.0588	0.5360	0.1486
46	0.2108	0.0409	0.0581	0.5405	0.1498
47	0.2068	0.0400	0.0574	0.5449	0.1509
48	0.2029	0.0392	0.0566	0.5492	0.1521
49	0.1990	0.0384	0.0559	0.5533	0.1534
50	0.1952	0.0377	0.0552	0.5573	0.1547
51	0.1915	0.0370	0.0545	0.5611	0.1560
52	0.1878	0.0363	0.0537	0.5648	0.1574
53	0.1843	0.0356	0.0530	0.5684	0.1588
54	0.1808	0.0350	0.0523	0.5718	0.1602

PERSON YEARS LIVED IN EACH STATUS FROM AGE X TO AGE 55: T(X)

AGE	EMPLOYMENT STATUS (USUAL HOURS WORKED PER WEEK) 0	1-19	20-34	35-44	45+
15	11.5878	2.1274	2.4982	18.1246	5.6610
16	10.7747	2.0883	2.4626	18.0326	5.6409
17	10.2437	2.0041	2.3888	17.7998	5.5627
18	9.8575	1.9167	2.3129	17.4791	5.4329
19	9.5790	1.8411	2.2407	17.0761	5.2623
20	9.3823	1.7811	2.1759	16.6034	5.0566
21	9.2185	1.7316	2.1173	16.0885	4.8435
22	9.0688	1.6880	2.0619	15.5482	4.6325
23	8.9264	1.6476	2.0083	14.9928	4.4242
24	8.6911	1.5997	1.9442	14.4882	4.2763
25	8.3860	1.5403	1.8727	14.0370	4.1634
26	8.0002	1.4746	1.8038	13.6697	4.0513
27	7.5602	1.4038	1.7339	13.3568	3.9450
28	7.0995	1.3305	1.6656	13.0660	3.8381
29	6.6243	1.2563	1.5969	12.7888	3.7335
30	6.1415	1.1820	1.5286	12.5188	3.6289
31	5.6512	1.1083	1.4605	12.2544	3.5256
32	5.2630	1.0378	1.3896	11.9114	3.3983
33	4.9393	0.9725	1.3190	11.5100	3.2593
34	4.6474	0.9126	1.2503	11.0724	3.1174
35	4.3724	0.8566	1.1831	10.6122	2.9761
36	4.1077	0.8030	1.1170	10.1374	2.8353
37	3.8504	0.7514	1.0517	9.6524	2.6946
38	3.5991	0.7012	0.9872	9.1595	2.5535
39	3.3531	0.6523	0.9234	8.6599	2.4118
40	3.1120	0.6046	0.8603	8.1544	2.2692
41	2.8756	0.5580	0.7979	7.6433	2.1257
42	2.6437	0.5125	0.7362	7.1268	1.9812
43	2.4161	0.4679	0.6753	6.6052	1.8358
44	2.1929	0.4244	0.6150	6.0787	1.6893
45	1.9739	0.3817	0.5555	5.5473	1.5418
46	1.7590	0.3400	0.4966	5.0113	1.3932
47	1.5482	0.2991	0.4386	4.4708	1.2434
48	1.3415	0.2591	0.3812	3.9259	1.0925
49	1.1386	0.2199	0.3246	3.3767	0.9404
50	0.9396	0.1815	0.2687	2.8234	0.7870
51	0.7444	0.1438	0.2135	2.2661	0.6323
52	0.5529	0.1068	0.1590	1.7049	0.4763
53	0.3651	0.0705	0.1053	1.1401	0.3190
54	0.1808	0.0350	0.0523	0.5718	0.1602

Table 9

Estimated Opportunity Expenditures On Children In Hours: White Women

ESTIMATED ANNUAL HOURS OF MARKET WORK: H(x)

AGE	TOTAL NUMBER OF CHILDREN 0	1	2	3
15	302	302	302	302
16	803	803	803	803
17	1112	1112	1112	1112
18	1368	1368	1368	1368
19	1577	1577	1577	1577
20	1666	1666	1666	1666
21	1705	1705	1705	1705
22	1724	1724	1724	1724
23	1490	1490	1490	1490
24	1311	1311	1311	1311
25	1397	1141	1141	1141
26	1435	1022	1022	1022
27	1459	1216	977	977
28	1477	1340	946	946
29	1492	1406	1164	931
30	1506	1442	1305	916
31	1518	1465	1378	1135
32	1531	1482	1417	1278
33	1542	1496	1441	1352
34	1554	1509	1459	1393
35	1565	1521	1474	1418
36	1576	1533	1487	1436
37	1587	1544	1499	1451
38	1598	1556	1511	1464
39	1608	1566	1522	1477
40	1618	1577	1533	1489
41	1628	1588	1544	1500
42	1638	1598	1555	1511
43	1647	1608	1566	1522
44	1657	1618	1576	1533
45	1666	1628	1586	1544
46	1675	1637	1596	1554
47	1684	1646	1606	1565
48	1693	1656	1616	1575
49	1701	1665	1625	1585
50	1709	1673	1635	1595
51	1717	1682	1644	1604
52	1725	1690	1653	1614
53	1733	1699	1662	1623
54	1741	1707	1670	1632
TOTAL	61135	58966	56867	54838

ESTIMATED FOREGONE ANNUAL HOURS OF MARKET WORK

AGE	TOTAL NUMBER OF CHILDREN 1	2	3	MARGINAL CHILD 2	3
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	256	256	256	0	0
26	413	413	413	0	0
27	243	482	482	239	0
28	137	532	532	395	0
29	86	328	562	242	233
30	64	201	590	137	389
31	54	141	383	87	242
32	49	114	252	65	139
33	46	101	190	55	89
34	45	95	161	50	66
35	44	92	147	47	56
36	43	89	140	46	51
37	43	88	136	45	48
38	42	87	134	45	47
39	42	86	131	44	46
40	41	85	130	44	45
41	41	84	128	43	44
42	40	83	127	43	44
43	39	82	125	42	43
44	39	81	124	42	43
45	38	80	122	41	43
46	38	79	121	41	42
47	37	78	119	40	42
48	37	77	118	40	41
49	36	76	116	39	41
50	36	75	115	39	40
51	35	74	113	38	40
52	35	72	112	38	39
53	34	71	110	37	39
54	34	70	109	37	38
TOTAL	2169	4268	6297	2099	2029

Table 10

Estimated Opportunity Expenditures On Children In Dollars: White Women

ESTIMATED ANNUAL MARKET EARNINGS (1981 DOLLARS)				
	TOTAL NUMBER OF CHILDREN			
AGE	0	1	2	3
15	794	794	794	794
16	2345	2345	2345	2345
17	3603	3603	3603	3603
18	7017	7017	7017	7017
19	8412	8412	8412	8412
20	9245	9245	9245	9245
21	9828	9828	9828	9828
22	10318	10318	10318	10318
23	9230	9230	9230	9230
24	8393	8393	8393	8393
25	9231	7535	7535	7535
26	9780	6891	6891	6891
27	10248	8494	6823	6823
28	10677	9618	6722	6722
29	11087	10361	8533	6821
30	11486	10904	9799	6820
31	11880	11356	10598	8691
32	12269	11765	11156	9996
33	12652	12152	11603	10806
34	13028	12524	11999	11358
35	13398	12887	12366	11792
36	13758	13240	12716	12166
37	14110	13583	13052	12509
38	14452	13916	13376	12833
39	14783	14238	13688	13142
40	15102	14547	13989	13436
41	15406	14843	14277	13717
42	15696	15126	14553	13985
43	15971	15395	14814	14238
44	16230	15647	15059	14477
45	16471	15883	15290	14701
46	16696	16101	15503	14909
47	16901	16303	15699	15099
48	17087	16486	15876	15274
49	17253	16648	16036	15431
50	17398	16790	16177	15568
51	17521	16912	16298	15687
52	17622	17014	16399	15788
53	17702	17095	16480	15867
54	17761	17154	16539	15927
TOTAL	502839	480592	459030	438195

ESTIMATED FOREGONE ANNUAL MARKET EARNINGS (1981 DOLLARS)					
	TOTAL NUMBER OF CHILDREN			MARGINAL CHILD	
AGE	1	2	3	2	3
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	1696	1696	1696	0	0
26	2888	2888	2888	0	0
27	1754	3424	3424	1670	0
28	1058	3955	3955	2896	0
29	725	2553	4266	1828	1712
30	582	1688	4667	1106	2979
31	524	1282	3189	758	1907
32	503	1113	2273	610	1160
33	500	1048	1846	548	798
34	504	1030	1670	526	640
35	511	1032	1606	521	574
36	518	1043	1592	524	549
37	527	1058	1601	531	543
38	536	1076	1619	540	543
39	545	1095	1641	550	547
40	555	1113	1665	558	552
41	563	1130	1689	566	559
42	570	1144	1712	574	568
43	577	1157	1733	581	575
44	583	1170	1753	587	582
45	589	1182	1770	593	589
46	594	1192	1787	598	594
47	599	1203	1802	604	599
48	601	1211	1813	609	602
49	605	1216	1822	612	605
50	608	1221	1829	613	609
51	609	1223	1833	614	611
52	609	1223	1835	614	612
53	607	1222	1835	615	613
54	607	1221	1834	614	613
TOTAL	22247	43809	64644	21562	20835

Table 11

Estimated Lifetime Opportunity Expenditures On Children[a]

Cohort	Education	CEB	Foregone Hours and Earnings: Whites Hours	Whites Earnings[b]	Blacks Hours	Blacks Earnings[b]
1940	12	1	2,979	33,326	942	4,701
		2	5,721	61,536	1,858	9,322
		3	8,273	86,436	2,773	13,982
	16	1	2,689	35,094	792	5,544
		2	5,310	70,944	1,580	11,108
		3	7,838	106,484	2,360	16,672
	20	1	2,261	37,191	645	5,855
		2	4,363	73,301	1,266	11,918
		3	6,434	108,948	1,885	18,030
1950	12	1	2,597	27,200	978	5,126
		2	5,051	53,550	1,941	10,233
		3	7,405	80,163	2,903	15,384
	16	1	2,170	28,821	743	5,366
		2	4,314	57,419	1,482.	10,755
		3	6,408	85,434	2,228	16,248
	20	1	1,843	29,661	618	5,739
		2	3,525	58,402	1,164	11,134
		3	5,176	86,839	1,721	16,688
1960	12	1	2,169	22,247	958	5,203
		2	4,268	43,809	1,905	10,413
		3	6,297	64,644	2,848	15,664
	16	1	1,762	23,469	694	5,040
		2	3,519	47,035	1,380	10,105
		3	5,238	70,268	2,072	15,288
	20	1	1,538	24,110	561	5,285
		2	2,932	47,641	1,061	10,256
		3	4,296	70,954	1,575	15,458

[a]Estimated opportunity expenditures in constant 1981 dollars, for white and black women aged 15 to 55, married continuously from age 23, first child born at age 25.

[b]1981 Dollars.

Table 12

Age at First Birth and Estimated Lifetime Opportunity Expenditures On Children[a]

Education	Age at First Birth	CEB	Foregone Hours and Earnings: Whites Hours	Whites Earnings[b]	Blacks Hours	Blacks Earnings[b]
12	21	1	2,353	23,354	931	4,943
		2	4,641	47,415	1,863	9,945
		3	6,877	71,742	2,803	15,048
	25	1	2,178	22,194	972	5,282
		2	4,280	43,645	1,923	10,515
		3	6,309	64,358	2,868	15,778
	31	1	1,878	19,822	981	5,534
		2	3,681	38,824	1,919	10,891
		3	5,417	57,059	2,837	16,196
16	21	1	2,014	24,707	703	4,799
		2	3,941	49,834	1,402	9,868
		3	5,833	74,678	2,100	14,975
	25	1	1,768	23,492	703	5,107
		2	3,526	47,035	1,390	10,179
		3	5,246	70,238	2,082	15,364
	31	1	1,508	20,827	703	5,290
		2	2,989	41,414	1,391	10,600
		3	4,439	61,624	2,092	16,102

[a]Estimated opportunity expenditures to age 55, in constant 1981 dollars, for white and black women, born in 1960, married continuously from age 20.

[b]1981 Dollars.

Table 13

Birth Spacing and Estimated Lifetime Opportunity Expenditures On Children[a]

Education	Spacing	CEB	Foregone Hours and Earnings: Whites Hours	Whites Earnings[b]	Blacks Hours	Blacks Earnings[b]
12	1	2	4,252	46,091	1,855	10,125
		3	6,290	67,552	2,735	14,986
	2	2	4,280	43,645	1,923	10,515
		3	6,309	64,358	2,868	15,778
	3	2	4,242	43,634	1,926	10,561
		3	6,206	63,976	2,892	16,001
	5	2	4,158	42,992	1,940	10,710
		3	5,944	61,780	2,906	16,288
16	1	2	3,525	47,069	1,348	9,890
		3	5,295	70,799	1,992	14,690
	2	2	3,519	47,035	1,380	10,105
		3	5,238	70,268	2,072	15,288
	3	2	3,475	46,574	1,395	10,251
		3	5,112	68,932	2,103	15,628
	5	2	3,387	45,664	1,402	10,372
		3	4,848	65,976	2,132	16,123

[a]Estimated opportunity expenditures to age 55, in constant 1981 dollars, for white and black women, born in 1960, married continuously from age 20. First child is born at age 25.

[b]1981 Dollars.